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Executive Summary

The objective of the current project is to identify the conceptual and strategic directions of the public policy, financial rehabilitation programs and institutional reforms to provide for the management improvement in the power, irrigation, drinking water supply and urban electric transport sectors. In the scope of this project, after analyzing the sectors operating results of 1998-2000, the financial rehabilitation programs for the next 5 years were developed for power, irrigation, drinking water and electric transport sectors. The projections are presented in baseline and pessimistic scenarios. The second – pessimistic scenario represents estimates for the sectors development under more risky and unfavorable conditions. (Model)

The four sectors are viewed as components of a single system taking into account the links and interrelations between the sectors and similarity of their problems. Obviously, the recent reform programs implemented in the sectors separately from each other would bring much higher results if implemented in complex. In this respect, an essential step toward that end was the establishment of the Inter-Sectoral Committee of Public Utilities.

The four public utility sectors of Armenia – power, irrigation, drinking water and urban transport – were founded in 1920-1930s. They were designed and operated as parts of unified infrastructure systems of the former Soviet Union. And, as part of those systems they were highly energy-intensive and did not adequately consider the scarcity of own energy resources of Armenia. Currently, all four sectors operate below their maximum capacity. They all can be characterized by the following factors:

- insufficient investments during the recent years;

- continuous deterioration of technical parameters and financial performance of the system; despite several investment projects in power, irrigation and drinking water sectors during the 2nd half of 1990s (mainly financed by the World Bank), technical condition of these sectors, in general, did not improve essentially;

- these sectors lack (or they are in the process of formation of) institutions necessary for operating under market principles (except for power sector);

- government policies are crucial in these sectors due to significant social impact they have, which in turn, affects the state budget.

Energy Sector

Analyses of financial activities of the energy sector showed that the system performed with a significant financial gap in 1998-2001.

In recent years financial gaps in the energy sector were conditioned by objective and subjective reasons. One of objective reasons is a relatively large share of TPPs in the electricity production structure. In the previous years 42-48% of electricity was produced by Hrazdan and Yerevan TPPs.

Another objective reason for the financial gap is underpayments for electricity by strategic consumers (irrigation, drinking water). In 1999-2001 receivables from irrigation and drinking water sectors amounted to 10.9 bln AMD.

Subjective reasons for financial gaps in the energy sector are large excess losses in distribution lines and low payment collection level from residential consumers, especially from irrigation and drinking water sectors. The latter are resultant from inefficient management of the companies.

The main indicators of the energy sector in 1999-2001

	1999	2000	2001
Total Revenues, mln AMD	86 867	85 023	77 326
O&M Expenditures, mln AMD	77 085	75 212	74 019
Collections, mln AMD	72 352	77 566	63 824
Collections, % of total bills	82%	90%	81%
Excess-line losses, mln AMD	12 651	13 204	13 096
Excess-line losses, %	12,4%	13,3%	13,6%
Total Financial Gap, mln AMD	(4 733)	2 354	(10 195)

The financial gap from current activities was financed by both banking and budgetary loans, as well as by accumulation of arrears on payables, especially on liabilities to the budget.

Irrigation Sector

During previous years “Irrigation” CJSC did not operate on fully commercial principles. The government has adopted a subsidization policy by setting up low tariffs as thus trying to support the agriculture sector. At the same time, due to the weak government supervision, as well as imperfect metering system the problems of this sector have not been solved, but have even deepened in this period.

Due to the lack of commercial relationships the staff and employees were not motivated to work better and organize the sector's activities in a more efficient manner. Losses in irrigation comprised around 30% during 1998-2001 equaling to 520-540 MCM annually (except for 2001, when losses reduced to 320 MCM).

At the same time, analyses of operating costs revealed that electricity consumption was about 70% of O&M costs in 19998-2001, and totaled 294, 324, 288 and 284 mln kWt.h correspondingly for water intake of 1456, 1294, 1195 and 1067 MCM. Analogously, there were inconsistencies for other expenditures, as well.

The main parameters of Irrigation Sector during 1998-2001

	1998	1999	2000	2001
Total bills for Supplied Irrigation Water (mln AMD)	1848	2,050	2,805	2,866
Collected payments (mln AMD)	1288	1050	1060	1516

Current Expenditures (accrued) mln AMD	7312	7862	7794	6383
Billing (current) AMD, CM	7.5	8.8	9.4	9.4
Tariff (AMD, CM)	1.90	2.31	3.37	3.86

As of 01 Jan, 2001 about 3.5 bln AMD arrears on payables accrued for salary, social payments, electricity and other suppliers, which exceeded the company's annual revenues 2.3 times. On the other hand, budgetary credits in amount of 13 bln AMD were provided to cover the financial gap of the company.

In fact, irrigation water tariffs were set at 1.9-3.86 AMD in 1998-2001 while cost-recovering tariffs would be 8-10 AMD. The resulting financial gap was covered mainly from budget sources and accumulation of arrears to its suppliers.

Subsidies provided from the budget to this company in 1999-2001 amounted to 14.4 bln AMD, budgetary credits equaled to 12.9 bln AMD (including credits before 1998). The above mentioned subsidies comprised 68.8% of current expenditures in 2000, and decreased up to 61.2% in 2001.

The total financial gap of “Irrigation” CJSC during 1998-2001 totaled to 24 bln AMD, which was financed by:

- Budgetary credits –3.7 bln AMD;
- Subsidies –D14.36 bln AMD;
- Arrears on payables – 3.6 bln AMD.

The company received a waiver for the payment of fines and penalties for social insurance payments (total amount was 5.1 bln AMD, 488 mln AMD of which the initial amount to be paid was equal to) on 14 April, 1999 according to the law adopted by the National Assembly.

Drinking Water Sector

Companies in the drinking water sector performed without financial programming and, therefore, without any evaluation analyses of the previous financial performance. In general, the problems in drinking water, as a whole, in the majority do not differ significantly from those in irrigation sector. In this sector, too, the transition to operating on commercial principles was very slow and is accompanied by many deficiencies of the management and metering system. In this regard, the adoption of Government Resolutions N 440 dated 17 May, 2001 and N 690-A dated 23 May, 2002 represented a significant steps towards applying an integrated approach to the solution of the sector, which, in its turn lay as a basis for the development of the Integrated Financial Rehabilitation Program, in general.

The main indicators of YWWC performance during 1998-2001 are presented in the Table below.

The Basic Indicators of YWW Water Supply in 1998-2001

	1998	**1999**	**2000**	**2001**
Water Intake (mln CM)	193	297	431	407

Water Supplied to Consumers (mln CM)	140.5	121.4	118.7	115.0
Losses (%)	27.0	59.1	72.5	71.8
Collection (%)	21.0	23.9	20.0	26.5

It is worth mentioning, that the lion's share of expenditures was electricity: approximately 70-75% of total. The annual financial gap of YWWC amounted to 4-5 bln AMD.

Current Gap of YWWC in 1998-2001(accrual)

Total Collection (mln Amd)	1,438	1,576	1,155	1,642
O&M	5,774	5,592	5,871	5,809
Taxes	0		369	62
Current Gap	-4,335	-4,016	-5,085	-4,229

The Table below summarizes the main indicators of Arm WWC performance during 1998-2001.

Basic Indicators of ArmWWC in 1998-2001

ArmWWC	**1998**	**1999**	**2000**	**2001**
Water Intake (mln CM)	142	149	160	146
Water Supplied to Consumers (mln CM)	90	83	79	77
Losses (%)		36.6	44.3	51.0
Total Collection (%)		30.0	30.6	37.9

For ArmWWC, the share of electricity in the total O&M expenditures comprises 40-45%. The annual financial gap ranged from 600 to 1400 mln AMD.

Current Gap of ArmWW in 1998-2001

Current Gap	**1999**	**2000**	**2001**
Total Collection (mln AMD)	1,204	1,254	1,458
Operation and Maintenance Expenditure	3,192	3,268	3,032
Tax	24.5	4.4	91.6
Gap	-2,012	-2,018	-1,665

Urban Electric Transport

Yerevan Subway. In 1990-1994 total passenger flow in Yerevan subway increased from 51.1 mln passengers reaching its peak load in 1993 – 71.4 mln passenger. After that the annual passenger flow decreased to 15.3 mln passengers in 2001.

Total revenues amounted 804 mln AMD in 1998, then this indicator decreased by 130 mln AMD annually and equaled to 416 mln AMD in 2001.

During the same period current O&M costs (excluding depreciation) were about 1 bln AMD and no arrears were accumulated on payables. Electricity expenditures comprised, on the average, 27 % of current O&M costs.

The main financial indicators of Yerevan Subway,1998-2001

Yerevan subway	1998	1999	2000	2001
Passenger turnover (mln passenger)	20.1	16.9	15.5	15.3
Revenues from passenger turnover (mln AMD)	807.1	698	549	460
Accrued expenditures (mln AMD)	1163.7	1652.7	1609.0	1473.3
Operation expenditures (mln AMD)	1058.2	1142	1205.7	1039.1
Amortization(mln AMD)		454.7	355.3	319.2
Taxes(mln AMD)	105.5	56	48	115

The cumulative financial gap of the Yerevan subway during 1998-2001 totaled to 2900 mln AMD, which was financed mainly at the expense of government subsidies of 3200 mln AMD. Despite the fact, that the compensation for transportation of free-of-charge passengers were not provided to the Yerevan Subway, however, the amount of subsidies was sufficient to cover the costs.

One of the reasons for the financial gap (apart from lower-than-cost-recovery ticket price) can be mentioned the fact, that the Subway was not flexible enough compared to other transport modes and the number of passengers had decreased in line with the increase of ticket price. Besides, the financial gap from the principal activities could have been covered also by inflows from non-principal activities. The latter were insignificant, since, to our opinion, not all the available resources were utilized efficiently.

Yerevan above-the-ground electric transport. The annual number of passengers of the Yerevan above-the-ground electric transport decreased from 19 mln to 12.3 mln during 1998-2001. Total revenues amounted to 780 AMD in 1998, and then decreasing annually by 90 mln AMD, reached 490 mln AMD in 2001, while revenues from the principal activities decreased from 560 mln AMD in 1998 to 308 mln AMD in 2001. The electricity consumption constituted 42-48% of current O&M costs. The Yerevan Electrotransport CJSC accumulated significant arrears mainly on electricity payments also because it did not receive the compensation for free-of-charge passengers.

Yerevan Subway gap in 1998-2001 and the Government Subsidies

	1998	1999	2000	2001
Revenues from passenger turnover (mln AMD)	807.1	698	549	460
Payments (mln AMD)	1119.7	1167.8	1253.3	1246.6
Current gap (mln AMD)	-312.6	-469.8	-704.3	-786.6
Capital expenditures (mln AMD)	85.2	46.2	229.8	60.9
Total gap (mln AMD)	-397.8	-516.0	-934.1	-847.5
State subsidy (mln AMD)	736	816	783	833

Institutional Developments in Public Utilities

During the transition from planned to market economy in 1990s public utilities of Armenia underwent numerous institutional changes. At the meanwhile, if the overall policy towards energy and water sectors is elaborated or, at least, outlined, the policy in the transport sector is yet to be defined and developed. As a result of that, in the transport sector in particular, all the existing deficiencies resulted in more serious problems, although there are less visible, probably because of their absolute size.

Experience of recent years showed that not only rapid and balanced institutional changes are needed in utilities sectors, but also they should be consistent and continue until the formation of preconditions necessary for the sustainable development of the sectors. Without such changes the sector will again deteriorate, as it already happened with the energy sector during the last 2 years. If systemic reforms have started in the water sector, including both financial and institutional issues, nevertheless, the need for the development of government policies and strategies towards the transport sector is evident.

Only during the recent years more systemic approaches were applied to irrigation and drinking water sectors, both on financial and institutional aspects, without which the transfer to full commercial principles, as well as improvement in service quality and efficiency of its operation will not be possible to implement.

The Integrated Financial Rehabilitation Program

Certain demographic and macro-economic indicators underlie the model: they are presented in the Appendix 5. Below are presented the main assumptions used for the projections of the indicators of the public utilities sectors.

Energy Sector

Under the main scenario it is assumed that the Vorotan – Arpa tunnel will not function after the construction completed. The operating loss for energy sector is estimated at 2,8bln AMD annually. It is also assumed that the 80% of excess loss reductions will increase the final metered consumption of 3 consumer groups (residential- 60%, industry-10%,other consumers -30%) and the rest of 20% will reduce electricity generation because of decrease in demand.

The energy consumption is projected for several categories of consumer groups. The analysis of residential consumption shows that the energy consumption dynamics is correlated to the GDP dynamics.

According to projections of electricity generation by each generating unit, the net energy production volume of electricity in 2007 will be equal to that of 2001. Besides, energy production will decrease in 2003-2004 and only in 2005 there will be tendency of growth. Such projections for electricity generation depends on decrease of technological and excess losses of high voltage distribution nets, as well as reduction of demand for electricity consumers in irrigation and water sectors. Meantime significant changes are projected in the structure of net

energy production, particularly the share of production by ANPP and HPPs will increase and the share of energy production by TPP will reduce.

After the privatization of Armenian electric network CJSC, the revenues from the energy consumption are projected becoming from the energy consumption of the average tariff and defined tariff margin for Armenian energy network (in 2003 for1kwt hour -0.015US$ let alone VAT, for the next years 0.0159US$ for 1kwt hour). The revenues from export are projected becoming from the current tariffs of energy exported to Georgia (0.0254USD per 1kwt/h)and the export projections. The expenditure forecasts are made according to the fuel and non-fuel expenditures.

Water Sector

In the projections of the water sector the projections for financial flows adopted by the RA Government resolution N440, 2002 May 17 and N 690, 2002 May 23 are taken into account. Meantime, it is presumed that the one-time debt restructuring transactions will not affect significantly the current financial flows of the companies.

Irrigation

Based on the forecasts it is concluded: the policy of subsidizing will continue during the following 4 years reducing year by year. Gradual contraction of subsidizing is possible to achieve by raising tariffs and/or by cutting the expenses. The activity of cutting expenses is to refer mainly the expenses of the whole electricity system. It is also important to raise the salaries expenditures and exploitation and maintenance expenditures up to a point enough for providing normal activity.

According to macro-economic projections, in 2003-2007 growth rate in the agricultural sector will make up average 3% annually. The accounts for irrigation water demand is based on the assumption that the growth will be provided on the account of the annual 1.5% growth of the land areas, which is based on recorded annually 2% land area increase during 1998-2000. Moreover, significant changes of irrigated lands in 2001 and 2002 are not taken into account because of draught in 2001 and high precipitation in 2002. In compliance with it the projection for irrigation water demand is based on the average volume of the actual water supply for ha annually 5thous CM in 1999-2002, increasing it up to 5.3 in the next years. Moreover, for 2002 it is assumed to be 4.5, taking into account high precipitation.

Projections of payment collections are made taking into account the management system reforms acting in the irrigation sector, the future development of the metering system, considerable growth of the wages in this sector ,and thus the possibility of materially encouraging flexible mechanism use, as well as participation of the private sector in the implementation of separate services, and for the purpose of achieving management in separate subsystems. As a result it is estimated, the payment collection indicator in the irrigation sector will reach from 65% in 2002 up to 90% in 2007.

The main objective for the rise of the irrigation water tariff is to attain its current cost covering level in 2007.The difference between this level (8.8 AMD) and the tariffs in 2002 makes up 4.6 AMD, which is equally divided between the coming four years. The tariffs rise comparably quicker in 2006 and 2007 taking into consideration the fact that by that time the investment of the metering system will be already achieved and thus making the high tariff introduction more efficient. Although in the expected period the average tariff is introduced and it is essential to create informational, subsidizing methods and mechanisms that will later enable to attain well established and differentiated tariff system.

The corresponding fees are included in the projections on the purpose of gradually participation of the private sectors on services and management contracts.

Drinking Water Sector

YWWC

Water consumption by residential consumers' in 2002-03 is estimated considering the per capita water consumption norm at 250 L. From 2003, this indicator is smoothly reduced by 10 L, in 2006 – by 20 L, since installation of water meters will significantly reduce water consumption1. Water consumption in 2006-07 was estimated becoming from the per capita water consumption at 180 L.

Collection level in 2003-05 is estimated under the program approved by N690, 23 May, 2002 resolution of the Government of RA, and for the coming two years the collection is expected to rise by 2% and reach 90%. This is based on improvement of YWW metering system and gradual increase of salary, as well as participation of private sectors and community involvement.

Electricity consumption is estimated 188 mln kwt/h, it is reduced to 110 mln kwt/h becoming from: i) pump capacity and work regime, ii) taking into account results of energy saving activities (presented in Appendix 3), iii) possible energy savings as a result of consumption decrease and loss reduction in intra-building systems.

ArmWWC

The number of the residential consumers was assumed to be approximately 295 thousands in 2002 while as a consumer is considered a 3.1 member family. The number of the subscribers is projected becoming from the annual 0.2-0.3% growth of the population.

The impact of the program on community water supply implemented by German Development credit bank (KfW) in Armavir marz and of the projected programs in Lori and Shirak marzes (correspondingly 29500 and 46200subscribers) is introduced separately, as they do not enter into the form of the AWW. However, in order to have the entire picture of the sector, they are included in the total accounts, and for developing comprehensive policy it is reasonable to contemplate the whole water supply sector, except the self-implemented water supply by communities.

Drinking water consumption was estimated becoming from the fact that presently about 5.5% use outside taps (which corresponds to the specific weight of the centralized water consumers up

[1] The actual consumption level will be updated

to 2002). In this case consumption norm is estimated equal to 50L per capita daily. Thus for consumers' list adjustment it is reported by AWWC that 16% of the consumers use outside taps, this number requires additional reconsideration and is not included in the framework of this project. Nevertheless, according to preliminary estimates, additional 130mln AMD subsidy is required in the case of new indicators of tap user in 2003.

For the rest of the consumers the norm is 200L per day. As a result the average consumption norm for AWWC consumers constitutes 192L per day.

Collection level in 2003-2005 is estimated according to the RA Government approved program N440, 17 may, 2001, thus projections are estimated according to separate consumer groups. Particularly it was assumed that payment collection level from budgetary and legal entities will amount 100%starting from 2003, collection from residential consumers will increase from 47% of 2002 to 88% in 2007.As result , in 2007 the total collection will amount to 90%. This is substantiated by the implementation of measures such as: private sector participation, salary increase, quality improvement due to capital investments.

Becoming from the present actual expenditures of pump stations, in 2003 electricity consumption was projected to be 67mln kwt /h. For the next year it was assumed that as a result of capital investment implementation it would be possible to shift to gravity flow, through pumps repair and efficiency increase , to decrease electricity consumption up to 52mln kwt/h in 2007.

VAT and income taxes are estimated becoming from the fact that before 2006 water companies estimate these taxes for residential consumers on cash basis assuming that about 75% of consumers are residents. For 2007, the accounts are made on accrual method thus having its impact upon the financial flows.

Urban Electric Transport

The suggested program for financial rehabilitation of urban electric transport aims at minimizing government subsidies through efficient utilization of available resources. Such program can be called a medium-term survival program for electric transport. On the other hand, the issues whether to leave this transport modes or to close them down were not discussed. A comprehensive Urban Transport Study is currently being carried out within the framework of the WB Transport Project, which is supposed to address those issues.

The Yerevan Subway. Projections suggest to increase subway ticket price from 40 AMD to 50 AMD from January 2003. At the same time, projections assume that passenger flow will decrease by 0.3 mln passengers per year taking into account previous 2-4 years tendency, which is based on recorded intendment in 2000-02.

It is assumed that the Subway will receive full compensation for passengers with privileges or the Government will decide the issue of privileges. Moreover, the volumes of revenues from non-principal activities is estimated basing on the assumption that they will be either performed by the Yerevan Subway itself or outsourced through a tender procedure. What concerns the issues of construction of new stations, renovations of vehicles, they are not included in this project.

Above-the-ground Electric Transport.

The number of passengers in projections for 2003 is assumed at 13 mln compared to 12 mln in 2002, and then increasing by 1 mln per year, it will amount to 16 mln in 2006, which is lower by 1.5 mln passenger then the indicator of 1999. Passenger flow is projected due to improvement of service quality and reliability enhance toward electric transport resulting from basic renovation, absence of which in 2000 and 2001 is one of the main reason for passenger flow decrease.

It is assumed that Yerevan Electric-transport will receive total revenue from passenger flow, that is the full compensation will be received for passengers with privileges, or Government will decide the issue of privileges.

As in Yerevan Subway sector, here are projected only current expenditures and capital renovations, which will enable to have normal activity for Electric-transport CJSC in coming 4-5 years. One of the important issues in the complex project of Yerevan Transport scheme are vehicle improvement and other capital expenditures, which are not included in the projections.

Below are summarized the projections of financial gaps of the public utilities sectors for 2003-2007.

Gap of Public Utility Sectors in 2003-07(baseline scenario)

mln AMD	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
Energy (functioning gap)	7619	8493	7577	6859	6272	**36820**
Irrigation Sector	-4485	-4118	-3606	-2086	-783	**-15078**
Drinking Water Sector						
YWW	-1935	220	670	612	733	**300**
Arm WWC	-810	-420	180	469	490	**-91**
Urban Electric Transport Sector						
Yerevan Subway	-533	-691	-863	-916	-902	**-3905**
Above-Ground Electric Transport	-154	-119	-93	-73	-72	**-511**
Total	**-298**	**3365**	**3865**	**4865**	**5738**	**17535**

Pessimistic Scenario. In the course of developing the baseline scenario, certain assumptions were made. Rather risky factors were summarized in the pessimistic scenario. The assumptions for the main scenario formulation depend on factors are beyond the activity of public utility sector. It indicates the impact of the risky factors upon the whole public utility sector on one hand, while on the other, it gives the financial estimates that the taxpayers and/or consumers will have to pay in case the pessimistic scenario takes place.

Sensitivity Analyses

Factors	Deviation from Baseline Scenario	Factor impact (mln AMD)	Change in Net Financial Inflows[2], mln. AMD
Import price increase of natural gas	+10%	(3 600)	(2 741)
Tariff margins of electricity net of Armenia	+10%	(4 933)	(3 670)
Electricity generation by ANPP	-10%	(2 762)	(1 911)
Electricity generation by HPP	-10%	(1 925)	(1 253)
Reflection of revealed excess losses norm in the consumption (80%)	-50%	202	135
Operation of Vorotan-Arpa tunnel	Yes	(3 361)	(2 457)
Compensation of difference of Artsakh foreign tariff	No	(785)	(322)
Change of electricity consumption structure			
Share of residential consumption	-1%		(230)
Share of industrial consumption	-1%		86
Share of Transport sector	-1%		205
Share of Irrigation sector	-1%		89
Share of Drinking Water sector	-1%		137
Share of Budgetary Organizations	-1%		(211)
Share of other consumers	-1%		(76)

Summarizing the analyses of the pessimistic scenario, the difference between financial inflows for all 4 utilities in baseline and pessimistic scenarios is 32 bln AMD, while only for Energy sector – 24 bln AMD.

Financial Gap of Public Utility Sectors in 2003-2007 (pessimistic scenario)

mln AMD	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
Energy sector (functioning gap)	3643	1935	2948	2733	1386	**12645**
Irrigation sector	-4991	-3583	-3263	-1700	-456	**-13993**
Drinking water sector						
YWWC	-2367	-1141	-1057	-1062	-913	**-6540**
AWWC	-1075	-472	-366	-114	-4	**-2031**
Urban electric transport						
Subway	-546	-706	-893	-954	-940	**-4039**
Above-the-ground electric transport	-162	-126	-105	-88	-88	**-569**
Total	**-5498**	**-4093**	**-2736**	**-1185**	**-1015**	**-14527**

Institutional reforms

Simultaneously, institutional reforms and restructuring suggestions are presented, which are the cornerstone of the developed financial rehabilitation programs. The main principle is the enhancement of commercialization of public utilities through private sector participation.

[2] The change in total cash flows also includes the changes in taxes combined with the impact of the particular factor itself

Institutional reforms of public utilities in the framework of the current project are aimed at revenue enhancement, expenditure optimization, and commercialization of company activity and improvement of their management. Separation of the policy implementation, management and regulating functions toward public utilities sectors by the Government is the main pre-condition for institutional reforms.

Revenue enhancement suggestions are related to the tariff policy reflecting costs of supply of services, as well as improvement of payment collection mechanisms. The latter includes private sector participation for implementation of payment collection, development of metering system, as well as development of methods of timely payments from organizations financed by the budget, taking into account specific weight of accumulated non-payments among increased liabilities from previous years.

The main emphasize of the tariff policy should be a shift to the cost covering tariff in the shortest time-period. Thus, the Establishment of the Regulatory Commission is a crucial element in implementing the institutional reforms in this sector.

The main principles of the Water Code of RA are private sector participation in the water sector operation and management sphere owned by the State which is based on trust management, concession contract, as well as leasing out to a commercial organization. In fact, either WUFs or State Water Committee are responsible for the management in the irrigation sector. The exclusive right of WUFs to manage the irrigation system will restrict competition and commercialization of the sector.

In general, tariff increase (up to cost recovery level) is a crucial element of institutional reforms in the public utilities sectors, except for the energy sector.

In the baseline scenario, tariff increase of the energy end users are not assumed, as they seem to be sufficient for normal activity of the sector. Irrigation tariffs are suggested to be raised from 4.2 AMD up to 8.8 AMD during 2004-2007 which will provide for current cost recovery. The transition into deferential tariffs is to be accompanied by subsidizing policy which in its term is to be conditioned by the policy of the agricultural sphere in that area, as well as by demographic priority. The functioning of deferential tariffs must promote agricultural production based on local climate and irrigation costs, as well as the reallocation of resources in agronomy and stock-farming, so to provide more profitable exploitation of the resources. Such big and time demanding reallocations need more basic approach than the usage of differential tariffs. First of all before actualizing the policy of such transition, it is vital to develop agricultural priorities. It is important to form some infrastructures in places implying big reallocations as well as promotion of agricultural branches' development and government supporting mechanisms, and also re-development of agricultural promoting programs.

The main policy for financial rehabilitation of the drinking water sector companies should be directed to reaching cost-covering level of tariffs in the possibly shortest period (including depreciation). This level, according to our assessments, can be socially acceptable for, at least, Yerevan WWC. Tariff increase will have two-sided effects: first, the companies will cease to work at financial gaps, thus, imposing additional burden on tax-payers, and on the other hand, the high tariff will encourage the residential consumers to install water-meters. Meters' installation will further encourage loss disclosure and their elimination in distribution, intra-building and intra-apartment networks, which, according to the pilot project run by the Yerevan WWC, constitute a significant part of losses.

Such "indifference" level in case of Yerevam WWC amounts to 70-72 AMD per 1 CM, while for ArmWWC it equals to 60-62 AMD per 1 CM.

In case of Yerevan WWC establishing a cost covering tariff from the second half of 2004 will help to refrain from direct subsidizing, and at the same time, starting from 2005 - provide preconditions for financing capital expenditures of about 900-1000 mln AMD at the expense of the company's own resources (the amount considers the actual collection level).

In case of Arm WWC the Government will continue subsidizing capital investments, since only in 2006, it will be possible to finance capital investments of annually 400-500 mln AMD at the expense of the company's resources.

Ticket price increase of the above-the-ground electric transport is not suggested, since this mode of transport a price taker and it should follow the pricing policy of other above-the-ground transport. In the case of the Subway, ticket price is suggested to increase from 40 AMD up to 50 AMD, which will not reduce passenger flow. Meantime, a short inquiry shows that the reduction in ticket price, along with optimization of above-the-ground transport routs and growth of their reliability, will significantly increase both underground and above-the-ground electric transport passenger flows. This inquiry first indicates the necessity of combining the underground and above-the-ground electric transport from the point of both transport routs and pricing policy. However, it is necessary to make a professional survey involving a larger number of respondents and including questions about service quality for making final and long-term decision on the ticket price.

Suggestions on cost optimization in all utilities mainly include the estimations of gradual decrease of energy-intensive technologies, which i) do not need large investments or there are already financing sources, ii) cost reductions through debt restructuring, iii) participation of the private sector, which will promote efficient allocation of resources. From this point of view, it is necessary to pay attention to the development of the suggestions related to the private sector participation, since these are one of the best ways to increase the efficiency of public utilities.

The clear delineation of the management functions from the policy implementation and regulatory functions is an essential factor for the private sector participation. The main way of this separation is viewed through balancing of the management and owners' interests through the establishment of board of directors along with introduction of monitoring, estimation and consideration of the project implementation, as well as providing for transparency and accountability of activities of the public utility companies.

For the improvement of the management process, we suggest, as in the power sector to establish Boards of Directors, which will allow the top management of companies acting more independently from various agencies acting or implementing various policies in this sector. The Boards shall operate on professional basis, that is, the Directors should be appointed for a sufficiently long period and be paid well. This will allow introducing corporate governance methods in state-owned companies, which, on one hand, will enhance increasing the efficiency of companies, and, on the other hand, will increase the transparency and publicity of their operation. The major function of the Board of Directors should be discussion and adoption of financial programs at the company level, their monitoring, evaluation, supervision and organization of independent audits of the companies books, and, of course, the preparation of the company to contract out its management and operation. It is recommendable to start outsourcing various functions from relatively simple service contracts, then, after having certain experience and confidence in qualifications of contractors, the contracts can be extended to more complex – management or operation – contracts.

Suggestions on debts restructuring or repayment, which will help to avoid further debts accumulation, constitute an important component of the utilities' financial rehabilitation program. The latter should be considered as a one-time support measure by the Government.

Taking into account the significant mutual influence of public utilities and social welfare, a special attention was paid on the possible social impact of the suggested reforms. Projections were done through financial, as well as availability and quality analysis. The latter are especially essential in the drinking water sector due to the importance of drinking water and the lack of alternatives with regard to satisfying sanitary and other vitally important needs and necessity of prevention of epidemics.

A draft Government Resolution will be submitted, which will transform the Integrated Financial rehabilitation Program into action plan and will define the measures to be taken by respective government agencies.

In order to ensure the implementation of the IFRP will be the development of financial rehabilitation programs at the level of companies in the sectors. They will address issues such as the structure, functions, internal recourses, work organization and management systems of those companies, which, afterwards, will serve as the main executors and beneficiaries of this program.

Introduction

The present report summarizes the findings and recommendations of the "Integrated Financial Rehabilitation Program for the Public Utilities". It presents the current situation in the power, Yerevan urban electric transport, irrigation and drinking water sectors, reveals the problems arising in the process of their operation, as well as assesses the degree of their commercialization, and the results of the implemented institutional reforms. The report presents the cash flow projections for 2003-07 and the measures of organizational and institutional reforms, which are the most important prerequisites for the financial rehabilitation of these sectors during the next 5 years.

The first section includes general description of the sectors, including their productive capacities, technical state and the problems that hamper the efficient operation of the sectors.

The second section of the report analyzes the institutional structure of the sectors, presents the main operating companies and the state policy implementation and regulatory bodies, as well as relationships between them and the current legal problems.

The third section analyzes the financial performance of the sectors during the recent years explaining the reasons for non-satisfactory, as well as those objective and subjective problems that hampered the transition to the operation on market principles.

The fourth section describes the interrelated model for financial rehabilitation and the projections for each of the sectors. The model will allow implementing joint monitoring of the sectors and assessing the impact of each sector on the other three, thus, enhancing the efficiency of economic policies and reform programs.

The suggested institutional and tariff reforms are presented in the next section. These reforms will make performance of different companies more systematized and commercially more efficient. As a result of all these changes, the state interference into the sectors will be minimized and private companies will be involved with gradually increasing authorities and responsibilities.

The sixth section addresses the estimates of the social impact resultant from the suggested rehabilitation program and, disclosing the most vulnerable strata of the population, reveals the ways to counter the effects of the suggested reforms.

The next section includes the suggestions on public utilities' debts restructuring and state financing regulation issues. Priority steps aimed at avoiding further accumulation of arrears on payables and receivables, as well as at making debt repayment process more efficient are presented in more detail. These measures will allow by one-time restructuring/ repayment options to max unload of the accumulated payables and receivables.

The report is concluded by the Conclusions and Appendices, which include the main indicators of the sectors' financial performance and the financial rehabilitation model, as well as debt restructuring mechanisms.

The subsequent development of similar programs at the level of companies in these sectors, which will address also issues like internal company structure, division of functions, availability

of internal resources, organizational and management structures, will be the logical continuation of this project, since the companies themselves are the targets and the bearers of the financial rehabilitation programs.

1. Description of Utility Sectors

1.1. Power sector

Energy sector of RA was created in 1920s. The first phase of the Yerevan HPP was put into operation in May 1926, and its capacity reached 4.56 MWt by 1928. Electricity generation increased from 20.6 mln KWt H in 1928 to 14891 mln KWt H in 1985. In Soviet era electricity production exceeded domestic consumption, and the surplus electricity was exported to other Soviet republics. Power sector in Armenia was developed to meet off-peak demand of the unified Trans-Caucasian power system and was exporting about 20-25% of the total generated electricity.

Electricity generation declined drastically in 1991-1993, after the Soviet Union collapsed. After re-commissioning of the ANPP in 1995, electricity generation reached 5575 mln KWt H, and grew to 5957.6 mln KWt H by the year 2000.

Currently, the power sector of Armenia consists of generating plants, transmission and distribution companies and "ArmEnergo" CJSC, which presently acts as a wholesale purchaser of electricity.

The overall generating capacity of the power sector of RA is 3040 MWt, from which 2550 MWt is presently utilized.

Total installed capacity of thermal power plants (TPP) is 1757 MWt. TPPSs operate on gas or heavy oil. Hrazdan TPP, with 1110 MWT electric and 560GCal/h thermal capacity, was put into operation during 1963-1974. Yerevan TPP, with 550MWT electric and 622GCal/H thermal capacity operates since 1963-1968. Vanadzor TPP, with 97 MWT installed electric capacity and 406 GCal/H thermal capacity, operates since 1964.

Metsamor Nuclear Power Plant (NPP) operates since 1976-1980. Two power-generating units are installed in the NPP with 815 MWt total capacities. NPP operation was stopped for environmental and seismic considerations in 1988; later, the 2nd power-generating unit (407.5 MWT) of the ANPP was re-commissioned in November 1995 in accordance with a decree of the Government.

The total installed generation capacity of hydro-power plants (HPP) is more than 1000MWT, 55% is generated by Sevan-Hrazdan cascade (7 plants, which were put into operation in 1936-1959). The share of Voratan cascade (3 plants – put into operation in 1970-1984) is 40%. The remaining 5% consists of the electricity generation of small HPPs.

Electric power transmission network consists of overhead transmission lines (OTL) with 220KW power and 1320km length and 110KW power and 3242 KM length and 14 substations of 220KW power. The total capacity of the existing transmission network is sufficient to meet present and projected domestic load of the power system. Transmission network in Armenia has the following intra-system connections with neighboring countries.

Table 1.1 Intra-system connections of transmission lines of Armenia with neighboring countries

Country	OTL name	Length of OTL (km) in Armenia	Present state
Azerbaijan	"Atarbekyan" 330 KW	164	Not functioning
Georgia	"Alaverdi" 220 KW "Lalvar" 110 KW "Javakhq" 110 KW	20.3 28.8 13.2	Functioning Functioning Functioning
Turkey	"Kars"220 KW	9.5	Not functioning
Iran	"Meghri" 220 KW	84.7	Functioning

Electricity distribution network in Armenia includes 110 substations of 110KV, and 278 substations of 35KV, as well as 1065 substations of 10(6)/0.4KV, 35KV, overhead and cable lines of 2648 km, 10(6) KV - 12610 km, and 0,4KV - 12650km.

Revaluation of the fixed assets in the power sector revealed that the power facilities of the system are outdated. Energy facilities are obsolete and old, thus, non-efficient, do not comply with international standards. 38% of installed capacities are being exploited for more than 30 years, operating time of thermal power plants are just under their normative limits – 200 000 hours. 70% of equipments installed in hydro-power plants are in operation for more than 30 years, 50% - for more than 40 years.

1.2. Irrigation System

In 80% of the rural land of Armenia agricultural production is possible only basing on irrigation. In Soviet era, due to availability of energy resources and their low costs, irrigation system relied mainly on powerful pumps, which used about 600-800kWH annually.

Observations during 1961-1995 showed that the average yearly precipitation level in Armenia is 17.6 MCM, average inflow of boundary rivers – 0.9 BCM. Difference of inflows and outflows of underground waters is positive – 0.1BCM annually, flow of inner rivers is 6.3 BCM. Renewable reserves of surface waters are 7.2BCM, of which – 2.3BCM usable (4 BCM - formerly), of which 2BCM (3BCM - formerly) – for irrigation and other industry sectors' needs.

Main natural water reservoirs in Armenia are the lake Sevan with 128.5 sq. km total area and 33.2 BCM volume, main rivers – Araks with 272 MCM, Debed with 1169 MCM, Vorotan with 679 MCM and Aghstev with 290 MCM annual flows.

Artificial water reservoirs are about 82 water reservoirs with 1067MCM total volume (Akhuryan – 525 MCM, Spandaryan – 277MCM, Arpi – 105 MCM, Aparani – 91MCM, etc.) of which 72 are for water conservation purposes. Some 10 new water storages, construction of which started earlier but not completed yet, will be able to store 400MCM water.

There are mains and inter-farm canals of 4500km of and intra-farm canals and waterlines with total length of 17200 km are constructed for irrigation purposes.

Total area of irrigated land, according to the results of stock-taking in September 1998 constitute 273.5 thousand ha, of which 222.6 thous. ha - was irrigated by "Irrigation" CJSC, of which by gravity flow – 118.4 thous. ha, by mechanical pumping – 104.2 thous. ha. Remaining

50.9 thous. ha were supplied by the bcal community pumps and sources (during 2001-2002 the majority of community pumps and sources was transferred to Irrigation CJSC). However, during the recent years only 153-161 thousand ha were irrigated by the "Irrigation" company (of which in 2001 88.3 thousand ha by gravity flow and 72.7 thousand ha - mechanically). Amother 15 thousand Ha was irrigated by community wells. Only 65% of lands supplied by irrigation network are being irrigated presently: it is explained by the fact that the agricultultural production in the remaining land lots is not sufficiently profitable.

1.3. Drinking water sector

According to data from 1961-1995, drinking water is abstracted from 123 groups of sources (with 584 capping), 176 artesian and deep wells, and 29 in-take points on rivers, 4820km main lines, of which 700km in Yerevan, the rest - in the regions (Marzes) of Armenia. The total length of local networks is 8020km, of which 1900km - in Yerevan.

Drinking water reserves in Armenia are of high quality. Location of drinking water reserves allow to supply the water to the majority of communities by gravity flow, whereas presently water is supplied to those areas by pumping.

There are 511 drinking water storage pools with 635 thousand CM storage capacity, of which 65 – of 285 thousand CM capacity are for water supply to Yerevan city.

Total length of sewage networks is 3990km, of which 1200km – in Yerevan. 1200km of the network are main collectors, 350km of which are in Yerevan.

Drinking water supply and sewage in Armenia is implemented by the Yerevan Water supply and sewage company in Yerevan and the Armenian water supply and sewage" CJSC in the majority of cities and villages of Armenia. Engineering structures of these companies are being exploited for 15-50 years, the majority is outdated and worn out, water metering system so far was virtually missing, and the existing meters are of low-pressure type.

At the same time, low quality of services provided by the companies, inefficient metering and low payment discipline, high losses, insufficient usage of gravity flow have resulted in technical and financial crisis of the water supply and wastewater removal systems. Moreover, metering and measuring system is virtually non-existent, management system and methods are far from being consistent with commercial methods.

1.4. Urban Electric Transport

Above-the-ground (tram and trolleybus) and subway are two electric transport modes operating in Yerevan. A ropeway also functions from the center on city to one of the districts situated on a hill (total length is 560m), passenger flow volumes of which are insignificant[3].

Yerevan subway. Yerevan subway was put into operation in March, 1981. At present, its total length is 12.1 km, 10 stations and 70 wagons are in use. Yerevan Subway CJSC was created according to the order N5 of the Ministry of Transportation of RA dated 09 January, 1998 by reorganization of the "Yerevan Subway" state enterprise. 100% of its shares belong to the Republic of Armenia. Yerevan subway has also specialized affiliates (alarm and communications, electro-technical, operation and renovation of vehicles, etc.), as well as associated companies. Passenger turnover was 51.1mln in 1990, it reached its peak in 1994 – 71.4 mln passengers. Subsequently, gradually decreasing, it reached 15.5 mln and 15.3 mln in 2000 and 2001 correspondingly. The main reasons for that were insufficient flexibility and inadequate pricing policy during the process of transition to the market and competitive environment.

At present, escalators and trains of Yerevan Subway are in a deteriorated technical state. Besides, water removal at some subway stations constitutes a serious problem; alarm and security systems need to be modernized.

Yerevan Electro-Transport CJSC. Yerevan above-the-ground electric transport operates since 1933 (tram), and trolleybuses - since 1955. At present, the total length of trolleybus lines installed is 207 km, of which 183 km – under operation, total length of tram line is 90km, of which 65 km is under operation. The company owns 2 trolleybus and 2 tram parks with 132 trolleybuses and 75 trams.

Passenger turnover in the last decade has continuously decreased: in 1990 it totaled to 61.5 mln passengers, while in 2000 and 2001 it reached 14.5 mln and 12.3 mln passengers. Annual decline by 2-3 mln passengers during the last years can be explained by the continuous worsening of the service quality and insufficient flexibility while there was an intense competition from other transport modes.

No modernization occurred in this sector since 1988. Trams and trolleybuses need capital renovation. However, changing some parts and details may prolong their life for additional 10 years. Overhead contact system also needs serious renovation/replacement.

[3] Yerevan Ropeway was privatized in 1996

1.5. Summary

The four public utility sectors of Armenia – power, irrigation, drinking water and urban transport – were founded in 1920-1930. They were planned and put into operation as parts of unified infrastructure systems of the former Soviet Union. And, as part of those systems they were highly energy-intensive and did not adequately consider the scarcity of own energy resources of Armenia. Currently, all four sectors operate below their maximum capacity. They can be characterized by the following factors:

- insufficient investments during the recent years;

- continuous deterioration of technical parameters and financial condition of the system; despite investment projects in power, irrigation and drinking water sectors during the 2nd half of 1990s (mainly financed by the World Bank), technical condition of these sectors, in general, did not improve essentially;

- these sectors lack institutions (or they are in the process of formation of) necessary for operating under market principles (except for power sector);

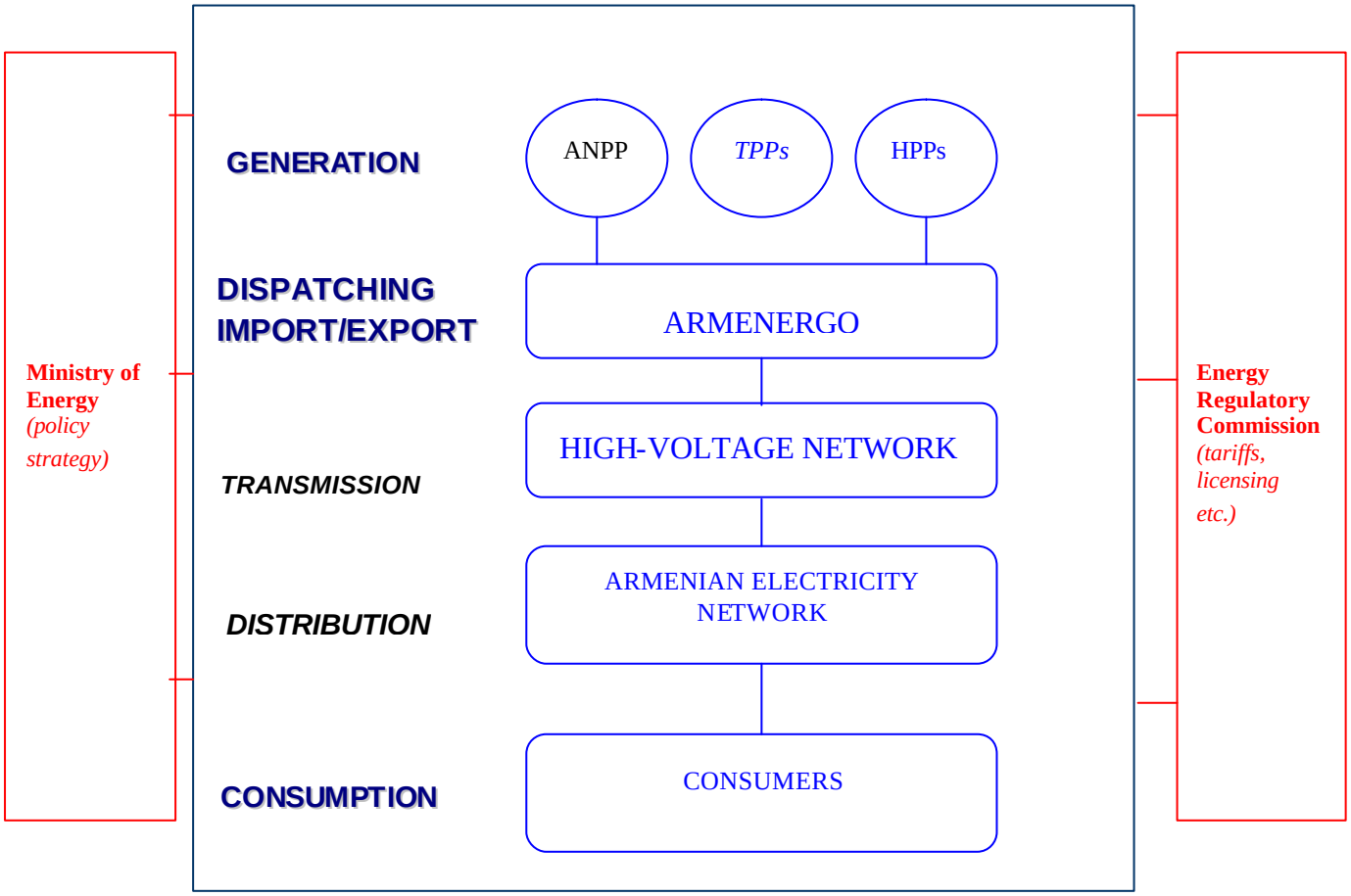
- adoption of adequate regulation policies by the government is important due to the sectors' essential social impact, which in turn, affects the state budget.

At the same time, if the main statements of state policies for energy and water sectors are already developed, or at least outlined, meanwhile, there is no a comprehensive program or a policy regarding urban electro-transport sector. As a result, without adequate surveillance to this sector along with the management inefficiencies (which are also characteristic to the other three sectors) resulted in more serious problems, although less visible, probably because of the comparative size of the transport sector.

2. Institutional Structure of the Sectors and Development in Recent Years

2.1. Power sector

Transition to the market economy led to shifting from centrally-planned structure in energy sector, and founding legally and economically independent power generating, transmission and distribution companies. Currently, the energy sector of Armenia can be depicted as follows:



Electricity transmission was separated from "Armenergo" and given to a newly-established "High Voltage networks" CJSC. "Armenergo" CJSC has been granted dispatch, wholesale purchase and technical regulation functions. These measures will serve as a base for creation of electricity wholesale market in the nearest future.

Four distributing companies were implementing electricity distribution and retail supply before 2002, after that distributing companies were consolidated into one – "Armenian electric networks" CJSC.

In recent years several privatization transactions were completed: 13 small HPPs were privatized, some new private HPPs were constructed, "ArmRusgas" joint CJSC was founded in gas sector and several power sector companies (construction, renovation, planning and other) were privatized or presently are in the process. Besides, the privatization of the electricity distribution companies, as well as large energy generating plants (except for ANPP). On the other hand, it is planned to create a wholesale electricity market in this sector.

The main principles regulating energy sector are defined in the current Law on Energy, which was adopted in March 2001. This law defines the main objectives of the government policies in energy sector, as well as defines the Energy Regulatory Commission, as an independent body which regulates relationships among legal entities of the power sector and consumers of electricity, thermal energy and gas. The main statements of the tariff policy in the power sector are also defined by the Law on Energy.

Energy regulatory Commission was created in 1997 after adoption of the first Energy law. According to the 17th article of the law the commission grants licenses in the power sphere, it defines import tariffs and tariffs for electricity, heat and natural gas transmission and distribution services, as well as for the services of systems operator.

At present, reforms' procedures, the main goals of which were identified by corresponding legal acts, are in the process. The most important of them are N551 dated 02 Dec, 1997, N555 dated 07 Sept, 1998 and N658 dated 23 Oct, 2000.

2.2. Irrigation sector

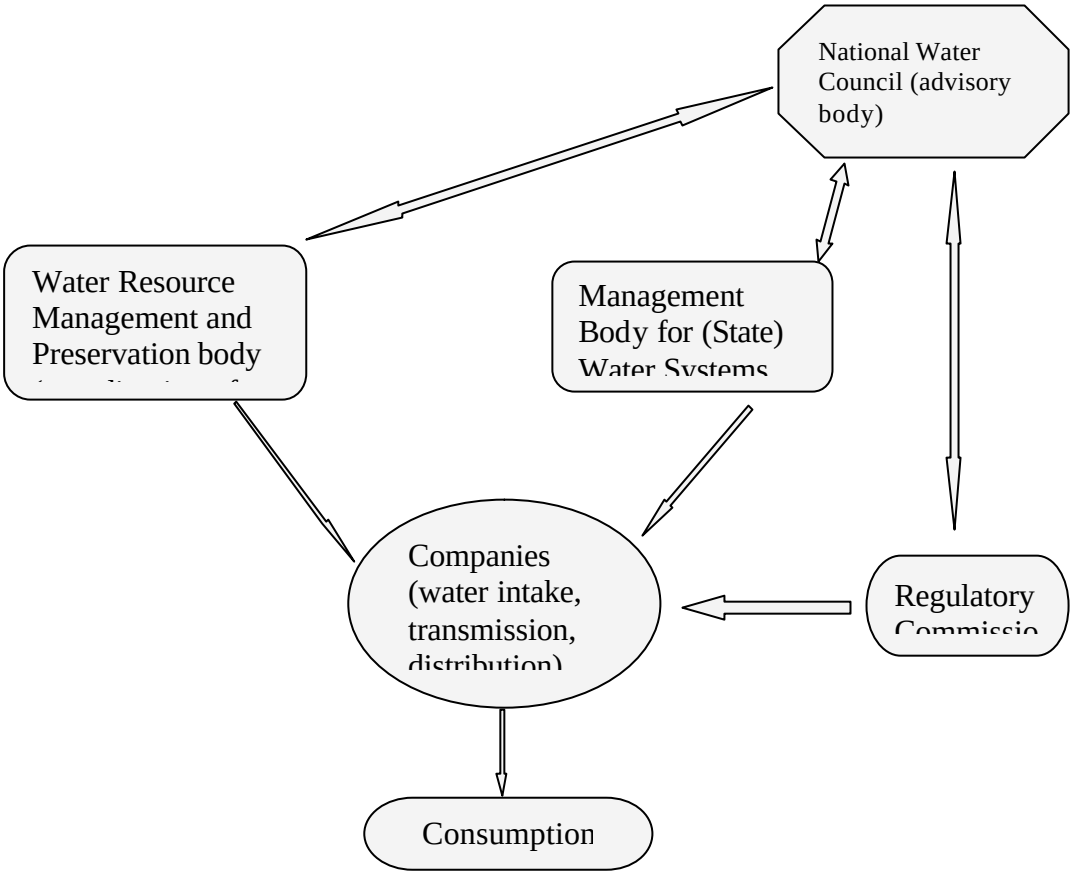
Before 2001 various functions in the field of water resource management were performed by several ministries and government bodies: ministries of nature protection, agriculture, urban planning and health, State agency for nature protection, Marzpetarans[4], local communities and others. No comprehensive policy and a complex approach related to the water sector (irrigation and drinking water) existed then. Different procedures in the water sector were implemented based on the Water Code adopted in 1992, which gradually had lost its relevance in the light of the speed of transition to market. As a result, the water sector did not switch to operation in compliance with commercial principles and management mechanisms, thus worsening the quality of its services and financial-economic indicators of the system.

The state committee of the water industry was created in accordance with the government decree N92, dated 09 Feb, 2001. Prior to the establishment of an independent body this committee is also responsible for the submission of tariff calculations on drinking water, sewage and irrigation. Moreover, it is responsible for the construction and operation of hydro-technical structures in Armenia, management of state shares of drinking and irrigation water supplying, sewerage companies and commercial companies operating on natural and artificial water pools

[4] regional governing bodies

(including the management of the project implementation units of the externally-financed investment projects).

Adoption of the new Water Code becomes an important step in the light of necessity to develop of comprehensive government policy with regard this sector and to search for systemic solutions to the problems.



The new Water Code of RA (10 July, 2002) provides with mechanisms and legal ways for national water resources' preservation, meeting the water needs of the citizens and the economy through efficient management of usable water resources and ensuring ecological stability. The new Water Code will become effective in 3 months after official publication.

Water resource management bodies defined by this Code are: Water National Council, dispute settlement committee, water resource managing and preserving body, water using associations and their unions.

Water resource management agency is responsible for the coordination of activities of various government bodies during the elaboration of the national water policy and national water program, implements management and preservation of water resources in compliance with the national program, as well as defines superficial and underground water intake limits, grants water usage licenses.

Water systems management body (presently Water Industry State Committee) is responsible for management and safe exploitation of the state-owned water systems. It ensures national water program implementation and supervises the organization of works in non-competitive water supply system. It also will present proposals on water tariffs to the Regulatory body.

The Regulating Committee will be responsible for the elaboration and implementation of the tariff policy in the water sector and granting licenses for non-competitive water suppliers for water system usage. It is planned to adopt a separate law on the Regulatory Committee.

"Irrigation" CJSC, presently operating in the irrigation sector, has undergone several institutional changes during recent years. Namely, according to N64 Government decree dated 09 Feb, 1999, all its branch companies have been reorganized and included into "Irrigation" CJSC as its branches without legal entity status. Main goals of the company are: preservation and operation of 3369km main and inter-community network, 406 pump stations and wells, and 3000km irrigation networks, as well as implementation of flood-prevention measures, protection of riverbanks and renovation works.

According to N44 decree dated 17 May, 2001, "Water Intake" branches were separated within the "Armwater supply and sewerage" and "Irrigation" companies. They implement water intake from water pools and sources.

During the first quarter of 2002 several organizational-structural changes took place in the irrigation system. "Irrigation water intake" CJSC was created, which undertook preservation and operation of irrigation water pools, pumping stations which take water from superficial water pools, gravity flow main structures and collectors. At the same time, 13 regional branches were formed within "Irrigation". Currently, "Irrigation" CJSC implements irrigation in Armenia through "Irrigation-water intake" and 13 Irrigation System Operating (ISO) CJSCs, some of the regions are irrigated by Armenian Water and Wastewater Company. Besides, 580 pumping stations, previously operated by the local communities were transferred to "Irrigation"CJSC.

In 2002 the Government of RA has adopted tariffs of irrigation water supplied by "Irrigation water intake" CJSC to regional "Irrigation "CJSCs, and water supply by the latter to water users. Irrigation water is supplied by "Irrigation water intake" CJSC to regional CJSCs based on contracts and according to the approved by water usage programs and presented applications.

Currently a stock-taking is taking place for the subsequent revaluation of the fixed assets and non-current semi-finished assets in the irrigation system (Government decree N1302 of 29 Dec, 2001).

As a result of the decision to reduce the irrigation tariff from 7 drams to 1.9 in 1998 the financial gap pf the sector has significantly worsened, for the financing of which budgetary loans were granted during the first years, then, subsequently they were replaced with direct subsidies. During the last year, however, the budgetary loans were waivered through the replenishment of the government's share in the capital

The present metering system is inadequate. Water flow is metering at water supply points to water-users associations and their unions and ate water in-take points. Moreover, numerous obstacles arise during payment collection due to the lack of efficient mechanisms and clear division of responsibilities between water-user associations (WUA) and their union (WUU), as the irrigation water supply contracts were signed with the WUAs or WUUs. The latter lack administrative capacities and adequate tools to collect payments.

2.3. Drinking water sector

Drinking water sector, prior to creation of the water industry state committee, as it was mentioned in the previous part of this report, was regulated by several central or local government bodies.

Yerevan water supply and wastewater company (YWWC) is responsible for water supply and removal in Yerevan, as well as for operation and maintenance of water supply networks in 52 villages around Yerevan. Armenian water supply and sewerage company (ArmWWC) is responsible for the operation and maintenance of water supply and sewage disposal networks in 47 towns and about 250 villages of Armenia. In most of these settlements ArmWWC also operates distribution networks on a contractual basis signed with local authorities. In about 450 villages of Armenia water is supplied the local authorities.

According to the Government decree N33 decree dated 21 Jan, 1999 on "Institutional reforms measure in water supply and water removal systems" all "ArmWWC" branch CJSCs were united into the head "ArmWWC" CJSC. At the same time, in compliance with the same decree, all community-owned water supply and sewage systems were included into "ArmWWC" CJSC.

Prior to 1998-1999, no complex programs on institutional reforms and financial rehabilitation were developed and implemented in drinking and irrigation water sectors, though certain financial assistance was provided in the shape of budgetary loans and subsidies. Moreover, objectives of the government's financial assistance goals were not clearly defined and

those assistance projects were not accompanied with institutional reforms within the sectors and companies.

Financial assistance from the government should be considered as a measure and precondition supporting the financial rehabilitation programs and complementing companies' own efforts towards financial rehabilitation, but not be considered as the main tool for their rehabilitation.

Simultaneously, a private operator was involved for the first time in drinking water sector: th operator was selected through an international tender, giving the winner the management right of Yerevan WSS for 4 years.

In February, 2001 the management of the government share in "ArmWWC" was transferred to the newly-organized Water Industry Committee. Subsequently, the same was done with the shares in "YerevanWSS" at the end of the year.

N149 Government decree dated 13 March, 1999, aiming at implementation of a complex program on water sector reforms, identified rules for water supply and sewage systems' usage, measures for water meters installation and switch to international accounting standards in drinking water sector.

Water meters installation is planned to be completed prior to 2006 (in Yerevan – before July 2003, in multi-apartment buildings' entrances, and before 2006 in each apartment). However, the current process of meters' installation can not be considered as sufficient.

The metering system is even less efficient in drinking water sector than in irrigation sector. Water taken from water springs is metered based on their capacity, and consumption – on accepted daily needs per person. The latter are much overestimated, if to take into account water supply actual duration and low quality. Moreover, lists of customers are not clarified, and large flow-losses due to deteriorating technical conditions of the networks, as well as numerous illegal connections further distort the real picture of water flow and its consumption.

"Armenian Water Supply and Wastewater" CJSC

Water Supply and Wastewater (ArmWWC) company of Armenia was created in 1971, with headquarters situated in Yerevan. According to the Law on Enterprises, of 1990, this company was changed to a special importance state enterprise.

In April 1999 ArmWWC was transformed into ArmWater state owned CJS company (100% of its shares belonged to the state).

ArmWWC presently has 12 branch and 40 local regional offices. It is responsible for water operation and maintenance of supply and removal systems in 47 towns and about 250 villages of Armenia. In most of these population centers ArmWWC also runs distribution networks based on contractual agreement with local government. In about 450 villages of Armenia water supply is implemented by local governing bodies.

Number of customers supplied by the company is 304388, of which 300075 residential consumers, 1688 budgetary organizations, and others – 2625. About 85% of its consumers are residential consumers, and remaining 15% - budgetary organizations and business entities. There are 12 branches and 39 local offices within administrative structure of ArmWWC. Total length

of water lines is 431Km, and the length of the network is 5921. Total length of the main water removal collector is 860Km, and the length of the network – 1930Km.

Branch offices are responsible for the operation and maintenance of the existing system.

"Yerevan Water Supply and Wastewater" CJSC

Yerevan Water Supply and Wastewater Company is responsible for water supply and wastewater disposal in Yerevan and 52 surrounding villages. Prior to December 2001 Yerevan Water Supply and Wastewater enterprise was subordinate to the Yerevan municipality supervision. Later, the management of the government share in YWWC was transferred to the Water Industry Committee.

Number of consumers supplied by the company is 265762, of which residents – 260196, others – 5566.

Presently the total length of water pipes is 738 Km, and the length of water supply and sewerage network (including collectors) is 1103 Km. It is planned to install meters at all water springs, which will significantly improve the situation with metering.

For the first time, a private operator was involved in drinking water sector by the results of International tender, transferring the management of Yerevan WWS to "Acer & Company Armenian Utility S.C.AR.L." company. The management contract includes certain performance indicators that the private operator agreed to achieve (payment collection improvement, reduction of losses, water supply duration increase, etc.) The first 2 years of the company's operation, due to different reasons is assessed by the Government of RA as non-satisfactory. Among these reasons were the private manager's lack of experience with transition economies, obstacles imposed by the current legal frameworks, and others (N690-A Government decree, 23 May, 2002). This decree approved the main indicators and financial rehabilitation program that the private manager shall ensure during the next 2 years. The results of the first experience of a private manager involvement are valuable if to take into account intentions of the government to use management contracts or leasing transactions for other companies in the public utilities sector.

The management of Mashtots branch of Yerevan WSS was transferred to a private operator starting from 1 June, 2002 for a 5-year period. The private operator will provide payment collections' estimates of the program approved by the Government decree (N690-A) dated 23 May, 2002.

2.4. Yerevan Electro-Transport

There are two major, rather different (if to take into account their specifics) sub-sectors in urban electric transport sector: Yerevan subway and above-the-ground electric transport (tram, trolleybus). If just theoretically it is possible to close down the above-ground electro-transport without incurring significant costs, then, in the case of subway, such an option is not available. The only way out is to make the operation of the subway maximum transparent and efficient (not

necessarily meaning profitable). In the case of the electric transport, too, the main objective is to make it maximum efficient, transparent and visible. All the recommended changes will allow the Government to make well-substantiated decisions regarding the sector's future, taking into account its advantages and the price necessary for maintaining an efficiently and reliably operating electric transport. Thus, first of all, it is necessary to develop a complex program aimed at companies' financial rehabilitation and institutional reforms.

Yerevan subway was put into operation in 1981. Yerevan Subway CJSC was created according to order N5 of the Ministry of Transport of the RA dated 09 Jan, 1998 and it was re-formed to special state enterprise. 100% of the company's shares belong to the Republic of Armenia, and the right of its management is transferred to the Yerevan municipality.

In 1955 the Yerevan Tram-Trolleybus Department was formed within the structure of Yerevan City Council. Yerevan rope-way started its operation in 1960s as a branch of Yerevan urban transport. The 3rd trolleybus park was put into operation in 1972. In Soviet times electro-transport, as well as most of the utility sectors, was continuously subsidized or receiving any other government assistance.

In March 1991, the three enterprises were transferred from Yerevan City Council to the "YerPassengerTrans" enterprise under supervision of the Ministry of Transport of the RA. The two tram enterprises were united into "Tramway" CJSC, and trolleybus parks were transformed into Trolleybus-1 and Trolleybus-2 CJS companies.

In 1999 the three enterprises were transferred to the Yerevan Municipality. In 1996 Yerevan rope-way enterprise was privatized.

On 01 Jan, 2000 tram and trolleybus enterprises were united into a single Yerevan Elecro-transport CJSC with 4 parks.

The passenger load peak for Yerevan subway was in 1993-1995 – 50-70mln passengers yearly. After that, due to the development of other above-ground and more flexible types of transport, as well as deterioration of the quality of the subway services and worsening technical state, inefficient management and tariff policies, passenger flow declined to the level of 15 mln passengers in 2001. Unsurprisingly, the above mentioned phenomena had their negative impact on the company's financial and technical state.

Passenger flow volumes for the above-the-ground electric transport modes also showed similar trends. Insufficient flexibility of the company, as well as frequent institutional changes in 1999-2001 and gradually worsening technical state of the system (one of the reason of which could be mentioned the reduction of the government assistance, which, in turn, resulted in passengers shifting to other transport modes.

2.5. Summary

During the transition from planned to market economy in 1990s public utilities of Armenia underwent numerous institutional changes. In 1990s, due to the imposed blockade on Armenia,

the energy sector appeared in the focus of attention, and therefore it passed transition period relatively quicker (undergoing institutional changes and formation of market institutions). The other utilities were developing more slowly, and frequent changes in those sectors, without sound and complex approaches, brought the sectors to the present state of deterioration.

Inefficient management at the companies was resultant from, on one hand, their inability to operate under market conditions, on the other hand, imposed inadequate government policies. The policies were directed toward direct and, oftentimes, only financial interference in companies' activities, instead of developing a legal framework, implementation of institutional reforms and creation of new stimuli and preconditions for a better work. Nevertheless, government financial interference was able to solve only financial problems and just temporarily. Unsurprisingly, the situation in these sectors essentially worsened, and it was a result of inertia from old times and obvious delay in reforms implementation.

In recent years more attention was paid to the problems of irrigation and drinking water sectors, regarding not only financial, but also institutional and structural issues, without which the sectors' transition to a commercial management system, enhancement of services' quality and operation efficiency would be impossible.

Experience of recent years has shown that not only rapid and balanced institutional changes are needed in utilities sectors, but also they must be consistent and continue until the formation of preconditions necessary for sustainable development of the sectors. Without such changes the sector will again deteriorate, as it already happened with the energy sector during the last 2 years.

While some systemic changes, including institutional reforms, took place in irrigation and drinking water sectors, the principles of the government policy and complex reforms in urban electric transport sector are not defined yet.

It is necessary to develop a complex program on urban transport that will optimize the routs of various urban transport modes in Yerevan. Different indicators, including traffic capacity of streets, advantages of the electric transport compared to other modes of transportation in the light of environmental protection requirements, should be considered in developing this program.

It is important that public utilities are considered not separately, but all together, as an interrelated system, taking into account interrelationships and similarities of the problems. It is obvious, that had the sectors been considered as one unified system involving ecological and community development problems, the results of investment and reforms projects of recent years would have been much better. In this regard, a significant improvement has taken place in 2002 through creation and operation of the so called inter-sectoral commission.

3. Analyses of financial activities of public utilities sectors in 1998-2001

3.1. Power sector

Analyses of financial activities of the energy sector showed that the system performed with a significant financial gap in 1998-2001.

In recent years financial gaps in the energy sector were conditioned by objective and subjective reasons. One of objective reasons is a relatively large share of TPPs in the electricity production structure. In the previous years 42-48% of electricity was produced by Hrazdan and Yerevan TPPs.

Electricity production structure had the following trends during 1999-2001:

	1999	**2000**	**2001**
Total, electricity production	100.0%	100.0%	100.0%
ANPP	35.5%	33.0%	33.9%
Hrazdan TPP	34.2%	38.1%	43.6%
Yerevan TPP	7.8%	6.5%	4.6%
Sevan-Hrazdan cascade HPP	6.4%	6.6%	5.7%
Vorotan HPP	13.6%	14.0%	9.8%
Dzora HPP	1.2%	0.9%	1.0%
Small HPP	1.1%	1.0%	1.4%

Change of TPPs' share in electricity production structure has a significant impact on cash flows of the energy sector. A 1 percentage point increase or decrease of the TPPs production in total results in:

- decrease/increase of net cash inflows by 570 mln AMD, if TPPs replace electricity production by HPPs;
- decrease/increase of net cash inflows by 440 mln AMD, if TPPs replace electricity production by ANPP.

Another objective reason for the financial gap is underpayments for electricity by strategic consumers (irrigation, drinking water). In 1999-2001 receivables from irrigation and drinking water sectors amounted to 10.9 bln AMD.

Subjective reasons for financial gaps in the energy sector are large excess losses in distribution lines and low payment collection level of residential consumers, especially from irrigation and drinking water sectors. The latter are resultant from inefficient management of the companies'.

Excess losses in distribution networks showed the following trend in 1999-2001:

	1999	**2000**	**2001**
Electricity supply to distribution networks, mln KWt H	4,711	4,743	4,585
Excess losses in distribution networks, mln. KWt H	587	628	630
Excess losses in distribution networks, %	12.46%	13.25%	13.74%

According to expert estimates about 80% of disclosed excess losses will be continue to be consumed (60% - population, 30% - other consumers, 10% - industry), while the remaining 20% will be saved, thus, decreasing domestic demand for electricity.

Moreover, as for payment collection upward registration frequent cases, that happen mainly in budget and quasi-fiscal system (state-owned) companies, are augmented by budget "contributions" in form of subsidies (according to results of analyses by "PA Consult").

Revenues from current activities in 1999 totaled 75.22 bln AMD, while expenditures from current activities were 82.25 bln AMD. Thus, the financial gap from current activities was about 7 bln AMD. In 1999 the major reasons for the financial gap were low level of payment collection – 87.9% (especially from irrigation sector – 62%, and from residential consumers – 79 %), excess losses – 587 Mln Kwt H.

Revenues from current activities totaled 79.63 bln AMD in 2000, and expenditures from current activities were 79.62 bln AMD. Thus, the energy sector operated at virtually 0-financial gap in 2000.

In 2001 revenues from current activities amounted to 64.5 bln AMD, and expenditures from current activities amounted 78.6 bln AMD, thus, resulting in operating gap of about 14.1 bln AMD. Such an abrupt increase of the gap in 2001 was conditioned by the decline in electricity consumption and low collection rate, which decreased by about 8.5% (from 89.4% up to 80.9%). In 2001 collection rate from water industry companies was particularly low: 27% – from WWC and 52% – from irrigation companies.

The financial gap from current activities was financed by both banking and budgetary loans, as well as by accumulation of payables, especially on liabilities to the budget.

Payments collection rates had the following trend during 1999-2001[5]:

	1999	**2000**	**2001**
Total collections, %	87.9%	89.4%	80.9%
Population	78.8%	80.6%	85.1%
Industry	113.5%	93.4%	81.7%
Transport	114.6%	66.3%	94.9%
Irrigation	61.7%	146.1%	52.4%
Water supply and sewerage	86.4%	43.3%	26.7%
Budget organizations	85.2%	77.4%	75.3%
Other consumers	104.5%	95.5%	119.6%

Conditioned by relatively low level of payments collection, payables in the energy sector increased significantly – by about 50 bln AMD.

[5] Collection rate is presented based on cash payments and, therefore, above 100% rate indicates repayment of debts for previous years.

Receivables in the power sector had the following trend during 1998-2001:

	1998	1999	2000	2001
Electricity supply				
Residential Consumption	6,420	12,989	18,804	23,175
Industry	5,735	2,740	4,808	7,057
Transport	628	393	957	1,108
Irrigation	2,489	6,093	11,209	15,056
Water supply and sewerage	4,671	5,612	10,109	13,985
Budget organizations	2,606	3,153	4,643	4,814
Other consumers	4,861	5,772	6,091	5,950
Total	27,409	36,751	56,621	71,146
Heat supply				
Industry	4,202	6,266	6,470	8,256
Residential	265	346	411	453
Other consumers	1,475	1,220	1,432	1,640
TOTAL	5,942	7,832	8,313	10,349

The Accounts Payable of the energy sector had the following trends during 1998-2001:

	01 Jan,1999	01 Jan,2000	01 Jan, 2001	01 Jan, 2002
Fuel expenditures	30,607	23,460	23,860	27,735
Gas	18,561	14,768	15,038	13,836
Natural gas	18,561	4,660	1,595	684
Currently imported gas		10,108	13,443	13,152
ITERA		8,008	2,406	1,019
ArmRusGas		2,100	11,037	12,133
Nuclear fuel	12,046	8,692	8,822	13,899
Non-fuel expenditures	8,689	7,035	8,093	11,791
Salaries and social insurance payments	2,596	2,662	3,786	7,025
Salaries	1,113	1,982	2,053	4,042
Social insurance payments	1,483	680	1,733	2,983
Of which penalties		556	1,054	740
Contractors and suppliers	6,093	4,373	4,307	4,766
Liabilities against privatized HPPs	256	420	445	731
Budget liabilities	14,488	26,480	32,207	33,597
Of which penalties	5,749	11,076	16,936	17,477
TOTAL	*54,040*	*57,395*	*64,605*	*73,854*

3.2. Irrigation Sector

In previous years “Irrigation” CJSC was operating mainly on non-commercial principles. The government has adopted a subsidization policy by setting up low tariffs as thus trying to support agriculture sector. At the same time, due to the weak government supervision, as well as imperfect metering system the problems of this sector have not been solved, but have even deepened in this period. Due to the lack of commercial relationships the staff and employees were not motivated to work better and organize the sector's activities in a more efficient manner. On the other hand it was conditioned by the fact, that formerly irrigation services were free of charge and transition to market principles was more slowly and difficult than in other sectors,

where some services were for charge. Mentality changes, together with work organization changes are important prerequisites for transition to market relationships and constitute a continuous and difficult process that should be overcome.

The state's, as of a shareholder of "Irrigation" CJSC, monitoring and supervision efforts of the government were not sufficient. First efforts of the sector's financial programming were taken at the end of 1990s, whereas about 11.6 bln AMD budgetary credits had been already provided to the company prior to 2000, part of which was prolonged delayed or reorganized due to the company's inability to repay the credits. In 1999-2001 budgetary credits were replaced with direct subsidies.

Long term direct and indirect support from the government has weakened the management sense of responsibility for efficient work organization. It proves that the sector's problems are not stipulated by only government deteriorated technical state but has even deeper reasons: inefficient management and split organization of the sector.

In recent years, one of the major steps toward improving the sector's operation was the development of a regular monitoring system and its application in irrigation sector, as well as other state-owned sectors and companies.

Since 1999 water sector companies regularly submit reports to the ministry of Finance and Economy, which include some financial (current) pivotal fro of ratios. Total liquidity, solvency of such a system is a significant promotion compared to the previous years' practice. However, financial departments of most of the companies lack sufficient skills and, besides, the accounting international standards. At the same time, these coefficients do not provide additional information for decision making, since the more evident indicators of financial operation prove visible changes in the sectors. Some ratios will be applicable in case the companies decide to involve private investors from capital markets.

In 1998 the water intake 1455.9 mln CM equal to 987.5 mln CM of irrigation water was supplied to consumers, and totaled bills for the water supplied were 1844.3 mln AMD with the average tariff of AMD 1.9, while current operation costs amounted to 7311.6 mln AMD. As a result the cost price of 1CM irrigation water was 7.5 AMD and equaled to payment collections comprised 69.9% of the billed water supply and financial inflows were 1288 mln AMD. There should be mentioned, that part of collections from farmers were received in-kind – receiving and then selling harvest, consequently suffering losses in the process of transportation and sale.

Similarly, in 1999 1050 mln AMD were collected, while the billed revenue totaled to 2050 mln AMD (irrigation water tariff was 2.31 AMD, while the cost-recovering price was AMD 8.8). Thus, a gap of 6795.0 mln AMD arose against actual expenditures of 7845.0 mln AMD. It was partially covered by provided state subsidies and budget credit. Increase of costs was mainly conditioned by salary increase and purchase of different share parts and materials.

In 2000 the average tariff for irrigation water was AMD 3.37, collections amounted to AMD 1060 Mln , while cost recovery price of irrigation water was AMD 8.2 and current operation costs – AMD 6802.2Mln.

In 2001 in case of water tariff equal to AMD 3.86 and 52.9% collections, payment collections' amount comprised AMD 1516.1 Mln, which exceeded previous years' indicators on

AMD 450-500 Mln. There should be mentioned, that the results of the drought of 2000 had influenced on 2000-2001 financial indicators.

Losses in irrigation comprised 32, 37.4, 39.5 and 30.47% during 1998-2001 equaling to 520-540 thousand. CM annually (except for 2001, when losses reduced to 320 thousand. CM).

At the same time, analyses of operating costs revealed that electricity costs constituted about 70% of total in 19998-2001, and totaled to evidence 294.1, 324.0, 288.0 and 283.5 Mln Kwt H. correspondingly for water intake of 1455.9, 1293.8, 1195.0 and 1066.5 Mln CM. Similarly, similar inconsistencies were present for other expenditures, too.

	1998	1999	2000	2001
Water Intake (mln CM)	1496.0	1563.6	1764.6	1066.5
Water Supplied to Consumers (mln CM)	972.5	887.5	832.4	742.5
Losses (%)	35.0	43.2	52.8	30.4
Payment Collection (%)	69.7	51.2	37.8	52.9
Electricity Consumption (mln kwt/h)	294.1	323.8	288	279

As of 01 Jan, 2001 about 3.5 bln AMD payables accrued for salary, social payments, electricity and other suppliers, which exceeded the company's revenues by 2.3 times. On the other hand, budgetary credits with amount of 12.9 bln AMD were provided to cover the financial gap of the company.

In fact, irrigation water tariffs were set at 1.9-3.86 AMD in 1998-2001 while cost-recovering tariffs would be 8-10 AMD. The resulting financial gap was covered mainly from budget sources.

	1998	1999	2000	2001
Total Collections (mln AMD)	1288	1050	1060	1516
O&M Costs (accrual)	7312	7862	7794	6383
Current Gap	-6,014	-6,799	-6,718	-4,867
Total Gap	-6.024	-7.626	-5.319	-5.400
State Subsidies		5.400	4.760	4.200
Refinancin/Restructuring of Budgetary Loans, Net		2.421		1.322
Accumulation of Payables	8777	-5776	-614	1217

Subsidies provided from the budget to this company in 1999-2001 amounted to of 5400, 4760 and 4200 mln AMD, correspondingly budgetary credits equaled to 12.9 bln AMD (including credits before 1998). The above mentioned subsidies comprised 68.8% of current expenditures in 2000, and decreased up to 61.2% in 2001.

The total financial gap if “Irrigation” CJSC during 1998-2001 totaled to 22.8 bln AMD, which was financed by:

- Budgetary credits –3.7 bln AMD;
- Subsidies –D14.36 bln AMD;

- Arrears on payables – 3.6 bln AMD.

The company received a waiver for the payment of fines and penalties for social insurance payments (total amount was 5.1 bln AMD, 488 mln AMD of which the initial amount to be paid was equal to) on 14 April, 1999 according to the law adopted by the National Assembly.

Several measures (according to the Government decree N440 of 17 May, 2001) were taken aiming at financial rehabilitation of the irrigation system, particularly:

- Several laws were adopted by the National Assembly on prolongation of debts on social insurance payments and waiving from penalty payments;
- Bank loan from "Armimpexbank" CJC was paid with a budgetary credit with a repayment period of 5 years (after 2006);
- Budgetary credits of 11660 mln AMD provided in 1998-1999 from the state budget were restructures as equity replenishment, and after that 9389.8 mln AMD was directed to cover the loses of previous years.
- Arrears on electricity bills were deferred to be paid after 2006, without interests.

In fact, 18 bln AMD was injected into this sector during 1998-2001, from which only a bank loan of 1.3 bln AMD is supposed to be repaid. The budgetary credit in amount of 9.2 bln AMD from 1999 and of 2.4 bln AMD from 2000 are already restructured as equity replenishment. Moreover the above mentioned amount of 18 bln AMD, a debt of 5.3 bln AMD was cancelled in the form of indirect subsidies and 2.6 bln AMD payables were delayed. Taking into account that according to the government programs irrigation tariff will cover current costs only in 2007 and that solution of the sector problems is a long term process, state interference, particularly in the form of subsidies, will be necessary in coming years. The financial gap of the sector will even increase before tariff reaches its cost covering level (if to take into account, that the tariff for 2002 was set lower, and, most probably, tariff will remain unchanged for 2003).

Analyses of Receivables and Payables

Receivables of the company grew from AMD 1564.4mln, and reached AMD 5868.6 ml in 1998-2001. The most abrupt growth occurred in 1999-2000. During 1999-2001 the share of receivables in current assets was correspondingly 42.4, 43.5 and 84.7%.

Table 2. Balances of accounts receivable

	1998	1999	2000	2001
Local communities	1339,8	2392,6	4093,3	5397,9
Others	90,3	121,5	121,5	180,0
Other activities	134,3	109,3	21,8	89,9
Other sales	0,0	0,0	102,4	200,8
Total	*1564,4*	*2623,4*	*4339,0*	*5868,6*

Large payables constitute a significant risk for the company.

Table 3. Balances of accounts payable

	1999	2000	2001
Electricity	2349	1516	2624
Salaries	282	398	420
Social Insurance payments	65	221	133
Credit liabilities	258	1561	192
Other expenditures	196	326	310
Liabilities to the Government	-527	-763	-184
Total	2622	3259	3496

The main payables occurred to the energy sector, on salaries and credit (bank) liabilities. AMD payables in amount of 9.4 mln from previous years were repaid and 5.1 bln AMD was cancelled during 1999-2001.

Summarizing, we can note the following reasons for accumulation of receivables and payables:

- Inadequate water metering system
- Low payments collection rate, the main reason for that inadequate skills and capabilities is administrative resultant mainly from the subsidizing and loss repayment policies adopted by the government;
- Large losses and extensive reliance on energy-intensive technology;
- Inefficient internal management system.

3.3. Drinking Water sector

Companies in drinking water sector performed without financial programming and therefore without any evaluation analyses of the results of financial-economic activities. In general, the problems in drinking water, as a whole, for the most part do not differ significantly from those of irrigation sector. In this sector too, the transition operation on commercial principles is being realized very slowly and is accompanied by many inefficiencies of management and metering system.

In 1999 and 2000 296.7 and 431.2 mln CM water was realized by YerevanWSS, supplying 121.4 and 118.9 mln CM drinking water to consumers. Revenues for offered services were AMD 6511.4 and 6421.3 mln in case of the established tariff of AMD 56.

The Basic Indicators of YWW Water Supply in 1998-2001

	1998	**1999**	**2000**	**2001**
Water Abstraction (mln CM)	193	297	431	407
Water Supplied to Consumers (mln CM)	140.5	121.4	118.7	115.0
Losses (%)	27.0	59.1	72.5	71.8
Collection (%)	21.0	23.9	20.0	26.5

Payments collections were AMD 1576.4 and 1200.9 mln and 24.2% and 18.7% of the revenues, while current operation costs were AMD 5702.4 and 5760.9 mln. As a result the company ‘s current balances were AMD -4660 and -5153 mln.

Structure of YWW Current Expenditures in 1998-2001

Current Expenditure	**1998**	**1999**	**2000**	**2001**
Operation and Maintenance Expenditures	5,774	5,592	5,871	5,809
Electricity (VAT)	4,731	4,254	3,979	3,729
Leasing	303.3	358.8	373	456.1
Raw materials, fuel	312	216.8	339	183
Other Expenditures	427.6	762.6	789	1038.6
Tax	0	0	369	62

In 2001 water amount supplied to consumers was 115.1 mln CM for the tariff of 56 AMD tariff, collections were 1616 mln AMD (26.7%), while current operation costs were AMD 5218 mln. Thus, the current balance of the company was - 4170 mln AMD.

The most part of expenditures was for electricity: in 1999 and 2000 4254 and 3979 mln AMD (74% and 69% of total costs). In 2001, cost of consumed electricity equaled to 3729.2 mln AMD (71.4% of total costs).

Current Gap of YWWC in 1998-2001

Total Collection (mln Amd)	1,438	1,576	1,155	1,642
Operation and Maintenance Expenditure	5,774	5,592	5,871	5,809
Tax	0		369	62
Gap	-4,335	-4,016	-5,085	-4,229

Water losses in the water supply system for ArmWSS company were 37% in 1999, 50% in 2000 and 50.7% in 2001; and for YWSS company water flow losses were 59.1% in 1999, 72.4% in 2000, 71.7% in 2001.

In 1999 and 2000, the water abstraction by ArmWWC company equaled to 141.9 and 168.7 mln CM, and 91.2 and 82.9 bln CM water was supplied to end-consumers (with 36.6% and 50.9% losses). The billed payments for those years were AMD 4010 and 4101 mln, while established tariffs for drinking water were 49.52 and 53.3 AMD. 4323 and 1963 mln AMD were paid for current operating costs –3286 and 3306 mln AMD. Payments were 1204 mln AMD and 1255 mln – 30% and 30.6% of billed income. As a result, current activities gap was 3119mln and 708 mln AMD in 1999-2000.

Basic Indicators of ArmWW Water Supply in 1998-2001

ArmWWC	1998	1999	2000	2001
Water Abstraction (mln CM)	142	149	160	146
Water Supplied to Consumers (mln CM)	90	83	79	77
Losses (%)		36.6	44.3	51.0
Total Collection (%)		30.0	30.6	37.9

Structure of Current Expenditures of ArmWWC in 1998-2001

CURRENT EXPENDITURES	1998	1999	2000	2001
Operation and Maintenance Expenditure		3,192	3,268	3,032
Electricity (VAT)		1,513	1,431	1,312
Leasing		498	716	669
Raw materials, fuel		136	54	56
Other Costs		642	538	611
Tax		24.5	4.4	91.6

Water abstraction amounted 160.2 mln CM in 2001, while the water supplied to end-consumers – 81.6 mln CM (51% loss), average tariff – AMD 53.3. Payments amounted to AMD 1538.2 mln (about 40%) against current expenditures of AMD 1998 mln. Thus, the company had a current activities gap of 1662 mln AMD.

Current Gap of ArmWW in 1998-2001

Current Gap	1999	2000	2001
Total Collection (mln AMD)	1,204	1,254	1,458
Operation and Maintenance Expenditure	3,192	3,268	3,032
Tax	24.5	4.4	91.6
Gap	-2,012	-2,018	-1,665

Water losses of the water supply system are classified into two groups:

a) Technological losses – losses, that occur during production and transmission process;

b) consumption losses – losses, that occur during water consumption.

Amount of water losses depend on the degree of metering system usage. Water losses in the water supply sector are inevitable. However, in case of a quality system and reliable operating of the system the losses can be minimized reaching the established norms of losses.

To identify normative loss rate for specific settlements and water supply systems it is necessary to:

1. investigate the technical state of the main structures, water lines and networks.

2. introduce a metering system by installing meters at main structures and on water lines and distributors, at buildings' entrances.

Analyses show, that the loss' indicator is reflected in the reports based on the rate of payments collection. Usually, it is in inverse proportionality with the collection rate: the lower

collections, the higher losses. Such reporting can not be considered reliable, since the amount of water supplied to networks and consumers, as well as the number of customers are not clearly estimated.

Comparison of YWW and ArmWW Losses and Total Collection Indicators

		1998	1999	2000	2001
YWW					
	Losses (%)	27.0	59.1	72.5	71.8
	Collection (%)	21.0	23.9	20.0	26.5
AmWW					
	Losses (%)		36.6	44.3	51.0
	Collection (%)		30.0	30.6	37.9

Analyses of Receivables and payables

As of 01 Jan, 2002 receivables for Yerevan WSS, CJSC totaled 25.7 bln AMD. Receivables had the following trend during 1998-2001:

Receivables	**1998**	**1999**	**2000**	**2001**
Residential	9195	12467,2	16807,6	21009,4
Budget organizations		865,4	982,4	1123,1
Non- urban consumers excluding population	2620,3	1711,5	128,2	129,7
"ArmWWC"			2197,4	2545,9
Other consumers	2336	973,1	1122	871,9
Total	14151,3	16017,2	21237,6	25680

It is obvious, that the debt for water and services provided to population comprises a large share of receivables – AMD 21.0 mln (81.7%). Receivables have abruptly increased in 2000 and 2001. The reason for that is a decline of collections.

As of 01 Jan, 2002 receivables of "Arm WSS" company comprised AMD 13.0 bln, and had the following trend in 1998-2001:

Receivables	**1998**	**1999**	**2000**	**2001**
Residential	3818,7	9523,3	11778,3	12620,1
Budget organizations	43,9	147	135	121,79
Other consumers	2215	184	363,9	233,7
Total	6077,6	9854,3	12277,2	12975,59

Again, the most part of debts of "ArmWWC" CJSC are debts for water and services provided to population – AMD 12.6 bln (96%).

Receivables abruptly increased in 1999-2000, and in 2001 they did not increase due to improvement in payment collection.

As of 01 Jan, 2002 payables of "YerWSS" CJSC were AMD 11.5 bln. They had the following trend during 1998-2000.

Payables	**1998**	**1999**	**2000**	**2001**
Electricity	7305,6	3544,8	6759,8	9707
Salaries	6,8	19	48,8	103
Social insurance payments	4,3	4,7	21,7	22,9
Operating and maintenance costs	289,8	940,3	1489,4	1633,7
Capital expenditures	107,7	104	155	43
Total	*7714,2*	*4612,8*	*8474,7*	*11509,6*

The most part of payables comprise debts for electricity – AMD 9707 mln and for the use of natural resources – AMD 1436 mln.

As of 01 Jan, 2002 accounts payables of "ArmWSS" company were AMD 6.05 bln and had the following trend during 1998-2000 period:

Payables	**1998**	**1999**	**2000**	**2001**
Electricity	1886,8	509,8	1151,6	1851,5
Salaries	170,5	359,7	0	372,6
Social insurance payments	405	1339,2	1218	459,9
Natural resource fee	159,4	262	272,6	408,7
Purchased water	1092,9	1483	2230	2580
Other suppliers	159,1	357,7	212,4	234,9
Bank loans	64,4	60,5	60,2	54,1
Total	**4087.9**	**4333.8**	**5791.1**	**6048.3**

During this period "ArmWWC" CJSC received budget credits with total value of 3174 mln AMD that were restructured in 1999. After that, according to decree N440 repayment term was prolonged with repayment after 2006. On the other hand, "ArmWWC" received state subsidies of 2852 mln AMD value, of which 2219 mln AMD – for electricity consumption.

According to the Law of RA on "Granting tax privileges to "ArmWWC" and "Irrigation" CJSCs" of 2455.7 mln AMD penalties were cancelled, of which 1138.4 mln AMD – for liabilities to the budget and 1138.4 mln AMD – for social insurance payments.

3.4. Urban Electric Transport

Yerevan subway

In 1990-1994 total passenger flow in Yerevan subway has increased from 51.1 mln passengers reaching its peak load in 1993 – 71.4 mln passenger. After that passenger flow decreased to 15.3 mln passengers in 1995-2001.

In 1998 total revenues totaled 804 mln AMD, then this indicator decreased by 130 mln AMD annually and equaled to 416 mln AMD in 2001.

During the same period current operation and maintenance costs (excluding depreciation) were correspondingly 104.5, 1111.6, 1136.7 and 984.0 mln AMD, without accumulating payables.

Electricity expenditures comprised, on the average, 26.8 % of current operating costs. In 1998 they were 438.3 mln AMD, in 1999 –377.3 mln AMD, in 2000 –359,4 mln AMD and in 2001 –336.7 mln AMD. Yerevan subway did not accumulated payables, but also has prepayments for electricity consumption in amount of 105 bln AMD.

The main financial indicators of Yerevan Subway in 1998-2001

Yerevan subway	1998	1999	2000	2001
Passenger turnover (mln passenger)	20.1	16.9	15.5	15.3
Revenues from passenger turnover (mln AMD)	807.1	698	549	460
Accrued expenditures (mln AMD)	1163.7	1652.7	1609.0	1473.3
Operation expenditures (mln AMD)	1058.2	1142	1205.7	1039.1
Amortization(mln AMD)		454.7	355.3	319.2
Taxes(mln AMD)	105.5	56	48	115

In 1998-2001 Yerevan subway had a financial gap at 2900 mln AMD, which was financed at the expense of government subsidy of 3200 mln AMD (in 1998 –736,0 mln AMD, in 1999 - 816.4 mln AMD, in 2000 –782,7 mln AMD, and in 2001 – 832,5 mln AMD). Passenger flow reduced resultant from subway's inflexibility as compared with other transport modes (one of the reasons for the financial gap formation). The financial gap from the principal activities could be covered by revenues from non-principal activities. The latter were insignificant, since intermediary organizations were involved in advertising and leasing out of premises.

Yerevan Subway gap in 1998-2001 and the Government Subsidies

	1998	1999	2000	2001
Revenues from passenger turnover (mln AMD)	807.1	698	549	460
Payments (mln AMD)	1119.7	1167.8	1253.3	1246.6
Current gap (mln AMD)	-312.6	-469.8	-704.3	-786.6
Capital expenditures (mln AMD)	85.2	46.2	229.8	60.9
Total gap (mln AMD)	-397.8	-516.0	-934.1	-847.5
State subsidy (mln AMD)	736	816	783	833

Yerevan above-ground electro-transport

In 1998-2001 annual volumes of passenger flow at Yerevan above-ground electro-transport have decreased from 19 mln to 12.3 mln, of which in average 4.3 mln free of charge passengers. Total revenue was 780 AMD in 1998, and then decreasing annually on 90 mln AMD, reached 490 mln AMD in 2001.

Revenues from the principal activities decreased from 560 mln AMD in 1998 to 308 mln AMD in 2001. Compensation provided by Yerevan city municipality for free-of-charge

passengers was provided in amount of 119 mln AMD in 1998, 338 mln AMD in 1999 and 44.1 mln AMD in 2000.

Current operating and maintenance costs for the same time period (excluding depreciation) amounted 893, 838, 892 and 911 mln AMD, and payments were 671, 829, 562 and 516 mln AMD correspondingly, thus accumulating payables (mainly for electricity). As a result of operating activities the company had a small net inflow in 1998-2001, while it had a operating gap of 210 mln AMD. This can be explained by declining passenger flow and lack of compensation for free passengers.

The main indicators of Yerevan electro transport CJSC in 1998-2001

	1998	**1999**	**2000**	**2001**
Passenger turnover (mln passenger)	20.7	17.7	15.4	12.9
Revenues from passenger turnover (mln AMD)	711.0	858.3	438.7	367.8
Accrued expenditures (mln AMD)	14557.3	770.8	804.3	745.9
Operation expenditures	802.0	721.0	761.2	706.5
Amortization	13742	36	25	23
Taxes	13.3	13.8	18.1	16.4

For the same time period current operation and maintenance costs (except for depreciation) amounted AMD 893, 838, 892 and 911 mln, and payments for them were AMD 671, 829, 562 and 516 mln correspondingly, thus accruing payables (mainly for electricity). As a result of operation activities in 1998-2001 the company had a small debit balance, in 2001 it had a operation gap of AMD 210 mln. It can be explained by decreasing passenger flow and absence of compensation for free passengers.

Electricity expenditures were 42-48% of current operation expenditures.

Obviously, the payables were accumulated mainly for electricity payments. They amounted to 257 mln AMD in 1998, without any significant increase in the next year, then increasing rapidly by 329 mln and 325mln AMD in 2000 and in 2001, they reached 918 mln AMD by the end of 2001. It should be mentioned, that expected compensation for free-of-charge passengers amount to 50-55% of annual cost of electricity consumption.

The financial gaps of Yerevan Electratransport CJSC in 1998-2001

	1998	**1999**	**2000**	**2001**
Total revenues (mln AMD)	744.4	891.7	462.4	382.6
Payments	702.6	735.2	408.5	336.7
Current gap	41.8	156.5	53.5	45.9
Capital expenditures	157.9	136.2	190.2	57.5
Total gap	-118	4	-135	-12

3.5. Summary

Financial analyses of public utilities operation revealed existing interrelationships among them: accumulation of receivables in one sector affects the other sectors' performance through the chain of non-payments. Deterioration of financial situation of companies is just the reflection of existing problems and reveals deeper problems resulting from with imperfections of the institutional structure, poor management and accounting systems.

Financial analyses of public utilities performed from the same point of view prove the necessity to develop a complex rehabilitation program for all the utility sectors. Taking into account that electricity constitutes very large share in the costs of the public utility companies the measures to increase metering and accountability in these sectors are of high importance. According to experts, "excess" consumption of electricity attributed to the Electrotransport CJSC, and expectedly, other government-owned companies, is boosted by the fact that the governments financially supports these companies without placing certain limits, restrictions or metering systems.

Key calculations of the latter should reflect flows of financial activities and services among the sectors. In this regard, a consolidated model is required, which will view all the sectors from one point and will analyze the problems conjointly. The model will be applicable not only during the program development phase, but also its implementation and will serve as a complex monitoring tool, thus making visible the impact of actual operation results of one sector on other sectors and allowing to make necessary corrections or adjustments.

4. Description of the Integrated Financial Rehabilitation Model

4.1. Description of the Model and its Underlying Assumptions

The model, which estimates the financial flows of energy, irrigation and drinking water, and urban electric transport sectors, reflects the main results of their financial performance, and based on that, links the models of the 4 sectors taking into account interrelations between them. The purpose of this model is to present the results of financial rehabilitation of the sectors in a complex manner: the model can later be used as a monitoring tool and, thus, allow assessing the impact of each utility sector on the other three. The impacts of deviations from the financial rehabilitation program during its implementation will be visible on not only on the indicators of the particular sector, but also on the other three sectors, since they all are closely interrelated. As a result, one-dimensional consideration of the four sectors will allow enhancing the efficiency of economic policies in these sectors, adjust the program indicators according to the actual data and changes in exogenous factors.

Certain demographic and macro-economic indicators underlie the model: they are summarized below in the Table****.

Table .The main macro-economic and statistical assumptions of the model

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
GDP growth rate, of which		1.096	1.060	1.060	1.060	1.060	1.060	1.060
Agriculture growth rate		1.110	1.030	1.030	1.030	1.0300	1.030	1.030
Exchange rate (average)	539.5	555.0	573.0	584.5	596.2	608.1	620.2	632.6
Consumer price index (compared with the previous year)	1.00	1.04	1.03	1.04	1.03	1.03	1.03	1.03
Average monthly salary	22,706	23,943	27,026	30,829	34,938	39,614	44,701	50,409
Number of population	2,996,777	3,002,678	3,008,739	3,013,863	3,020,532	3,028,425	3,038,025	3,048,293
Population growth rate		1.002	1.002	1.002	1.002	1.003	1.003	1.003
Interest tax rate %			20%	20%	20%	20%	20%	20%

4.2. Underlying Assumption for the Sectors

Energy sector

In the main scenario it was assumed that the Vorotan –Arpa tunnel was out of operation after it had been put into operation. The operating loss for energy sector is estimated at 2,8bln AMD annually. It is also assumed that the 80% extra norm loss will be reallocated between the consumer groups(for residents- 60%, generating-10%,other consumers by 30% proportion) and the rest of 20% will be reduced at the cost of energy generating.

The energy consumption projection was made according to different consumer groups. The analysis on resident consumption show that the energy consumption dynamics is in someway connected to GDP dynamics. Within the framework of this project, for residents' energy consumption conservative scenario is adopted by 0.5 %, considering the gasification activity of the residential buildings and the recent adopted heat supply project.

The industrial energy consumption dynamics had growth tendency in the recent years: in 2001 the energy consumption increased by 1.7% compared to the previous year, in 2000_by 3.4 %.

The accounts made on the main energy-intensive branches' projection growth and the energy consumption of the branch structure in the industry show that in 2002-2006 the energy consumption in the industry may increase by 9-10% annually. Nevertheless, within the framework of this project for the energy consumption growth a conservative scenario is adopted(by 4% annually).The latter is conditioned by the possibility of energy saving technology introduction, with the possibility of substituting the energy by other means(gas, central heating).

The energy consumption volume by budget institutions is estimated within 229-235mln kwt/h which corresponds to the factual energy consumption in recent years.

"Other consumer" group mainly include the public utility organizations. The energy consumption projection of the latter is made becoming from the growth tendency in this sector, which is estimated within 8-10 % in the coming years. In view of what was mentioned above the energy consumption annual increase by "other consumers" is estimated at 5%, considering the feasibility of energy saving technology investment.

The projections of energy consumption by transportation, irrigation and sewerage are introduced in the corresponding section of the project.

According to projection of generating stations, the net energy production volume of electricity in 2007 will be equal to that of 2001. Besides, energy production will decrease in 2003-2004 and only in 2005 there will be tendency of growth. Such projections for electricity generation depends on decrease of technological and excess losses of high voltage distribution nets, as well as reduction of demand for electricity consumers in irrigation and water sectors. Meantime significant changes are projected in the structure of net energy production,

particularly the share of production by A NPP and HPPs will increase and the share of energy production by TPP will reduce (energy produced by ANPP in 2006 will increase by 6.3 % compared to 2001, reaching from 33.9% to 40.2%in the total , as well as HPPs share will grow by 5.8 %, reaching to 23.7% from 17.95% for TPPs their generation will decrease by 12.1 %, reducing from 48.2% to 36.1%).

The revenues in the energy sector yield from the internal and external market sale. After the privatization of Armenian electric network CJSC, the revenues from the energy consumption are projected becoming from the energy consumption of the average tariff and defined tariff margin for Armenian energy network (in 2003 for1kwt hour -0.015US$ let alone VAT, for the next years 0.0159US$ for 1kwt hour), which is the sale price of the energy supplied to Armenian electric networks by "Armenergo" and energy volume supplied to Arm. electric networks. The projections of the energy consumption volume supplied to Arm. electric networks are based on the final estimates of the energy consumption. The revenues from export are projected becoming from the current tariffs of energy exported to Georgia (0.0254USD per 1kwt/h)and the export projections. Besides, "other export" line notifies that the projections of energy volume exported to Georgia are made becoming from the dynamics in the recent years. It is expected that in 2007 the volumes of energy export to Georgia will increase, amounting to 340mln kwt/h.

The expenditure forecasts are made according to the fuel and non-fuel expenditures.

The projections of the natural gas consumption volume by Hrazdan and YTPP are based on the Hrazdan and YTPP's energy generating projections and fuel expenditure share. The fuel specific expenditures are projected according to dynamics of the recent years, as well as on the operation possibilities of more optimal regimes for fuel expenditures. The share for Hrazdan is established 370-375gram conventional fuel, for Yerevan -375g.conv.fuel.The price for natural gas, including VAT, is established 79.1$/1000m3.

Nuclear Fuel: The expenditures for nuclear fuel ,used by ANPP for the energy production have been planned according to the defined 0.0054 US$ from share for 1kw hour and according to the HPP projections of energy production .

The non-fuel expenditures concerning the social payments and energetic system staff payments will increase by 12% in 2006 compared to that of 2002(Armenian electric networks excluded),reaching from 7.753mld drams to 8.685bln At the same time, it is projected to optimize the number of employees in the energy system from 5679 to 5136 at that period. As a result of this, the average salary in energy system will increase by 36%.

The expenditures for repair, row materials and other materials will increase by 14% in 2006 compared to that of 2002 (Armenian electric sets excluded), reaching from1.695bln drams to 8685bln drams .This growth is conditioned by inflation factor. The expenditures for repair, raw material and other materials are projected based on necessary minimal requirements for providing the operation of the energy system organizations.

The liabilities of energy system organizations for VAT are calculated by accrual method.

Resultant from this, it is projected that in the future period the energy sector will have approximately 6-8 bln AMD surplus as a result of the activities it implements.

Water sector

In the projections of the water sector are taken into account the projections for financial flows adopted by the RA Government resolution N440, 2002 May 17 and N 690, 2002 May 23.Meantime, it is presumed that the one time debt restructuring will not have strong impact upon the current financial flows.

IRRIGATION

According to macro-economic projections, in 2003-2007 growth rate in the agricultural sector will make up average 3% annually. The accounts for irrigation water demand is based on the assumption that the growth will be provided on the account of the annual 1.5% growth of the land areas, which is based on recorded annually 2% land area increase during 1998-2000. Moreover, significant changes of irrigated lands in 2001 and 2002 are not taken into account because of draught in 2001 and high precipitation in 2002. In compliance with it the projection for irrigation water demand is based on the average volume of the actual water supply for ha annually 5thous CM in 1999-2002, increasing it up to 5.3 in the next years. Moreover, for 2002 it is assumed to be 4.5, taking into account high precipitation. Consequently it is projected that in 2003 the water intake will be 1242mln CM, in the next year it will reduce as a result of 20mln CM loss decrease, and then will increase .

The fact that the former community wells were put into operation by Irrigation CJSC during 2001 is taken into account. Approximately 15.1thous ha lands are irrigated from it, the water intake makes up annually 100-120mln CM .

Projections of payment collections are made taking into account the management system reforms acting in the irrigation sector, the future development of the metering system, considerable growth of the wages in this sector ,and thus the possibility of materially encouraging flexible mechanism use, as well as participation of the private sector in the implementation of separate services, and for the purpose of achieving management in separate subsystems. As a result it is estimated, the payment collection indicator in the irrigation sector will reach from 65% in 2002 up to 90% in 2007.

The main objective for the rise of the irrigation water tariff is to attain its current cost covering level in 2007.The difference between this level (8.8 AMD) and the tariffs in 2002 makes up 4.6 AMD, which is equally divided between the coming four years. The tariffs rise comparably quicker in 2006 and 2007 taking into consideration the fact that by that time the investment of the metering system will be already achieved and thus making the high tariff introduction more efficient. Although in the expected period the average tariff is introduced and it is essential to create informational, subsidizing methods and mechanisms that will later enable to attain well established and differentiated tariff system .

According to resolution N440 17 May 2001, approved by Government of RA, in three most energy-intensive systems 39mln kwt/h energy saving will be gained as a result of the mechanic shift into gravity flow, as a result 39 mln kwt/h electricity will be saved (see Appendix 6).

Meantime, as a result of the rehabilitation and renovation in the main and subordinate water channels the filtration losses will decrease by 52.8mln CM annually.

As a result of all this activities in 2007 the water losses will shrink by 28% and the annual energy consumption will reach from 280mln kwt/h in 2003 up to 240mln kwt/h in 2007, the community wells' energy consumption inclusive (approximately 35mlm kwt/h) for which the necessary energy is calculated based on the average indicator for one CM 0.31kwt/h -annually 112*0.31=35mlnkwt/h, for 2002 it is estimated 30mln kwt/h considering the high precipitation .

For general irrigation (let alone the deep wells) the energy indicator for one CM water intake is estimated on the level of 2002 (0.22), as a result of loss reduction and transition into gravity flow, the indicator will shrink to 0.21, 0.2, 0.17 in 2004-2006, thus keeping the same level. It corresponds to the indicator spent on one CM water intake by mechanic method. Meantime the indicator for the energy spent on one CM water by the consumers will have similar dynamics, 0.3 in the first year, it will somewhat decrease in the following two years, than in 2006 it will reduce rapidly. Meantime the energy tariff was estimated 17.6AMD on the level of average tariff in 2001 (the community wells excluded), for community wells it is estimated 25 AMD in 2002. Starting from 2003 the energy tariffs are estimated 21.67AMD, on the assumption that in the next year double tariff meters will be installed in all former pump stations of the community wells.

Consequently, the common average tariff for irrigation sectors and for the community wells will be 18AMD.

The operation and maintenance expenditures (the salaries and social insurances excluded) are mainly based on expenditures estimates approved by N 440, 2001, resolution of Government of RA. The salaries are established within the limits fixed by the mentioned resolution with one-year delay, as the government scenario for tariff rise did not come into living.

Capital expenditures include currently current international project and government co-financing to that project.

The corresponding fees are included in the projections on the purpose of gradually participation of the private sectors on services and management contracts – 50 mln AMD in 2003, 150mln in 2004, 200mln in 2005, then 300mln AMD annually. According to our preliminary estimates, these results will be sufficient resource for organization and implementation of above-mentioned activity in the coming years.

The taxes are calculated on cash basis 2006 inclusive. For 2007 the taxes are calculated by accrual method, correspondingly being included in the account of the required subsidy.

As are result of the projections the gap in 2003 will make up 4582mln AMD, by reducing it will decrease to 587mln AMD in 2007.

Drinking water sector

Yerevan WCC

Drinking water consumption estimates. The number of residential consumers was assumed 265 thous in 2002, while as a consumer is considered a 3.5 members family. Consumers' number increase in 2003-2007 is estimated becoming from the expected population annual growth rate at 0.2-0.3%.

Water consumption by residential consumers' in 2002-03 is estimated considering the per capita water consumption norm at 250 L. From 2003, this indicator is smoothly reduced by 10 L, in 2006 – by 20 L, since installation of water meters will significantly reduce water consumption[6]. Water consumption in 2006-07 was estimated becoming from the per capita water consumption at 180 L.

Water consumption by budgetary organizations and other consumers is estimated based on the actual consumption of 2001 and forecast consumption of 2002, since in the previous two years significant efforts have been made trying to improve metering system, and therefore, 2001-02 indicators are close to the "actual" consumption volumes. However, parallel to metering improvement, it is necessary to consider and specify limits and norms for water payment accounting.

Collection level in 2003-05 is estimated under the program approved by N690, 23 May, 2002 resolution of the Government of RA, and for the coming two years the collection is expected to rise by 2% and reach 90%. This is based on improvement of YWW metering system and gradual increase of salary, as well as participation of private sectors and community involvement.

Moreover, it is assumed that payment collection level will amount from 25% up to 86% in 2007,and collection from budgetary organizations and other consumers is assumed 100% from 2003-04.

Projections assume that water supply tariff will be raised to 72 AMD for water supply from July 2002 only. The annual average tariff will be 59 AMD, and for the next years-72 AMD. At the same time, the tariff will rise to 56 AMD for non-urban and wholesale consumers (43 AMD for 2004). This will enable not only to make cost recovery, but also to make capital outlays, which should coincide with the investment policy of the company. It is worth mentioning that tariff increase will not raise drinking water payments, it will remain 420-440 AMD.

Electricity consumption is estimated 188 mln kwt/h, it is reduced to 110 mln kwt/h becoming from: i) pump capacity and work regime, ii) taking into account results of energy saving activities (presented in Appendix 3), iii) possible energy savings as a result of consumption decrease and loss reduction in intra-building systems. At the same time electricity tariff is assumed at 17.8 AMD for 2003-07, which is equal to 2001-02 actual level.

Operation and maintenance expenditure, salary and social insurance coincide with the expenditures included in the project approved by N690-A, 23 May, 2002 resolution, excluding the amount for community services and management fee. The community service payments and management fees for 2002 are estimated 50 mln AMD instead of amount of 379 mln AMD approved in above-mentioned project, later it increases up to 400mln AMD for 2006-07.

[6] The actual consumption level will be updated

Besides, trust management involves judicial manager , who will have appropriate qualification , practice, experience and capacity for governing water supply sector. (The more detailed description is in the option of institutional reforms).

At the same time, the management fee of „A. A. Utility„ increased up to 70mln AMD (because of AMD devaluation) compared to the amount notified in the above-mentioned Government resolution.

Capital investments' estimates represent integration of investments financed from the World Bank in the framework of the Community development project and the Government co-financing amounts (represented in N690-A Government resolution dated 23 May, 2002).

Depreciation: After summarizing the inventory results, it is necessary to use the fixed assets of amortization on tax account purposes. However, Amortization aimed at financing in the framework of this project are estimated becoming from possible tariff rise (2004).

VAT and income taxes are estimated becoming from the fact that before 2006 water companies estimate these taxes for residential consumers on cash basis assuming that about 80% of consumers are residents. Natural resource fee is not included in the accounts, since it is suggested to free Water Supply companies from payments or define symbolic amount, as in case of resource fee.

As a result, YWW CJSC will have 1935 mln AMD financial gap in 2003, and in 2004 it will have 220mln AMD surplus, which will grow up to 733mln AMD in 2007.

ArmWWC

Drinking water consumption estimates: The number of the residential consumers was assumed to be approximately 295 thousands in 2002 while as a consumer is considered a 3.1 member family. The number of the subscribers is projected becoming from the annual 0.2-0.3% growth of the population.

The impact of the program on community water supply implemented by German Development credit bank (KfW) in Armavir marz and of the projected programs in Lori and Shirak marzes (correspondingly 29500 and 46200subscribers) is introduced separately, as they do not enter into the form of the AWW. However, in order to have the entire picture of the sector, they are included in the total accounts, and for developing comprehensive policy it is reasonable to contemplate the whole water supply sector, except the self-implemented water supply by communities.

As a result of this activities, the number of the subscribers supplied by ArmWWC are given in one line starting from 2003, yearly considering the number of the consumers that were not supplied by this company. Nevertheless, from the point of tariff and subsidy policy in the scope of this project we consider it indispensable to observe the financial outcome of the activity of Lori and Shirak water supply units.

Drinking water consumption was estimated becoming from the fact that presently about 5.5% use outside taps (which corresponds to the specific weight of the centralized water consumers up to 2002). In this case consumption norm is estimated equal to 50L per capita daily. Thus for

consumers' list adjustment it is reported by AWWC that 16% of the consumers use outside taps, this number requires additional reconsideration and is not included in the framework of this project. Nevertheless, according to preliminary estimates, additional 130mln AMD subsidy is required in the case of new indicators of tap user in 2003.

For the rest of the consumers the norm is 200L per day. As a result the average consumption norm for AWWC consumers constitutes 192L per day. Thus annual water consumption by a 3.1 member family will amount to 213CM. Meantime, taking into consideration the individual water meter installation, during2005-2006 the water consumption per capita is reduced in a way to amount to 180L in 2007.

Water consumption by budgetary organizations and other consumers is estimated based on the actual consumption of 2001 and forecast consumption of 2002. Therefore, alongside with accounting and metering rise there is the necessity to update the limits and norms of water consumption prices in the present budget planning of the budgetary organization.

Collection level in 2003-2005 is estimated according to the RA Government approved program N440, 17 may, 2001, thus projections are estimated according to separate consumer groups. Particularly it was assumed that payment collection level from budgetary and legal entities will amount 100%starting from 2003, collection from residential consumers will increase from 47% of 2002 to 88% in 2007.As result , in 2007 the total collection will amount to 90%. The unexpected growth of the collections is based on the fact that as a result of the private companies' involvement, salary rise of the company stuff and investment, quality rise is observed.

Before acquiring a comprehensive metering system, the loss indicator, in fact is a estimative one. It was assumed as was presented in the program approved by N440 resolution dated 17May, 2001.Taking into account the project of the capital investment as well as the structural reforms it reduces from 50% to 35.5% in 2007. (see appendix 6).

In the projections it is suggested to raise the water supply tariffs to 62AMD in July, which will enable to attain not only current cost covering level, but also to implement capital expenditures. This tariff is an average tariff , whereas it is necessary to invest differentiated tariff system for ArmWWC and other residential areas. Therefore the transition into that system will be possible only after accounting system introduction in course of some years as a result of the separate brunches' expenditure optimization and results analysis. The more detailed tariff policy terms are given in the option devoted to structural reforms.

Becoming from the present actual expenditures of pump stations, in 2003 electricity consumption was projected to be 67mln kwt /h. For the next year it was assumed that as a result of capital investment implementation it would be possible to shift to gravity flow, through pumps repair and efficiency increase, to decrease electricity consumption up to 52mln kwt/h in 2007.

Current expenditure volume is approximately by 300-400mln AMD less than expenditures in the project approved by Government resolution N440, as the tariff increase assigned in the above-mentioned resolution is not implemented. Particularly, slow salary increase scenario is adopted, besides, the trustee management fees for 2003,which were estimated at 100mln AMD, were included in the projections, amounted to 300mln AMD in the next two years, keeping

unchanged in the future. Trustee management assumes participation of a legal entity, who will have an adequate qualification, technique, experience and ability to manage water supply system.

Capital investments' estimates represent integration of investments financed from the World Bank in the framework of the Water supply development project and the Government co-financing amounts (represent in N690-A Government resolution dated 23 May,2002), as well as the capital expenditures, before the implementation of the project .

VAT and income taxes are estimated becoming from the fact that before 2006 water companies estimate these taxes for residential consumers on cash basis assuming that about 75% of consumers are residents. For 2007, the accounts are made on accrual method thus having its impact upon the financial flows.

As a result Arm WWC will have 810mln AMD financial gap in 2003, 180mln AMD surplus in 2004, which will amount to 642mln AMD up to 2007.

Urban Electric Transport of Yerevan

Yerevan Subway

Projections suggest to increase subway ticket price from 40 AMD to 50 AMD from January 2003. At the same time, projections assume that passenger flow will decrease by 0.3 mln passengers per year taking into account previous 2-4 years tendency, which is based on recorded intendment in 2000-02.

It is assumed that the Subway will receive full compensation for passengers with privileges or the Government will decide the issue of privileges.

Revenues from non-principle activities: Revenues from leasing are estimated becoming from 1000 sq/m leasing land in 2003 change to 1400 sq/m in 2007 (1750 are leased out in 2000-01) and gradual increase of leasing payment for 1 sq.m. Decrease of leasing territory is conditioned by N 784, 20 July, 2001 resolution of Municipality, according to which the maximum leasing territory is defined 1700 sq.m. The average price is assumed at 400 AMD daily, and 144000 AMD annually. As a result gross revenue from leasing will increase from 150 mln. AMD in 2003 to 210 mln. AMD in 2007.

Revenues from advertisements are estimated by two parts. Number of advertisement sheets pasted in wagons will grow up from 7 to 11 in 2007 due to passenger flow increase. At the same time, the revenue from one advertisement sheet is estimated at USD 70 equivalent. Total size of advertisement signs in the stations will grow up from 80 sq/m to 400 sq/m in 2007. The maximum size for advertisements are not accounted, which can preliminary can be more then 800 sq.m. The price of 1 sq/m is estimated 30 USD equivalent.

As a result the gross revenue from advertising will be estimated 35 mln AMD in 2003, and it will grow up to 100 mln AMD in 2007.

Other revenues (audio ads, sales of tickets), as well as revenue from administrative territories are not included in financial model, because if revenues from leasing and

advertisement activity are over-estimations (or underestimated their expenditures), these revenues will be additional source for compensation of non-full-collection.

Other revenues from non-principle activity are estimated 34.6 mln AMD, which is equal to expected results of 2002.

The annually sale of 27-28 mln CM underground pumped-out water can be essential revenue for Yerevan Subway. The opportunity to use this water at best for drinking water (after necessary filtration), and at worst for irrigation, sanitary, fountain should be studied later, and are not included in the present projections.

Projections of expenditures assumed to provide necessary quantity of current expenditures for Subway normal activity. Projections are assumed that electricity expenditure will remain 18 mln. kwt/h annually, as passenger flow increase is not projected. Tariff is assumed at 18.6 AMD/kwt/h., which is equal to 2001-02 actual results. Meantime, in order to justify the consumption of electricity for the Yerevan Subway, it is necessary to develop norms for electricity consumption by trains, taking into account the specifics of the Yerevan Subway, which is out of the scope of the current project.

Salaries will increase in coming three years, and average salary of 39000 AMD per month will amount to 67000 AMD in 2006.

It is assumed that operation and maintenance expenditures will not undergo essential changes. Depreciations estimations kept the previous-year-level. Capital expenditures assumed at 100 mln AMD for 2002, then the amount grows accordance to inflation.

As for new station construction, improvement of vehicles and infrastructures, they need additional study and are not included in the project.

As a result, Yerevan Subway will have 528 mln AMD gap, which is to be financed at the expense of State budget subsidies.

Yerevan Electric Transport CJSC

Projection for Electric Transport CJSC includes:

The number of passengers in projections for 2003 is assumed at 13 mln compared to 12 mln in 2002, and then increasing by 1 mln per year, it will amount to 16 mln in 2006, which is lower by 1.5 mln passenger then the indicator of 1999. Passenger flow is projected due to improvement of service quality and reliability enhance toward electric transport resulting from basic renovation, absence of which in 2000 and 2001 is one of the main reason for passenger flow decrease.

It is assumed that Yerevan Electric-transport will receive total revenue from passenger flow, that is the full compensation will be received for passengers with privileges, or Government will decide the issue of privileges.

Revenues from advertisements and leasing are projected to rise from 25 mln AMD in 2002 up to 49 mln AMD in 2002 due to leasing out vacant territories resultant from unified parks, as well as undertake advertisement measures.

As in Yerevan Subway sector, here are projected only current expenditures and capital renovations, which will enable to have normal activity for Electric-transport CJSC in coming 4-5 years. One of the important issues in the complex project of Yerevan Transport scheme are vehicle improvement and other capital expenditures, which are not included in the projections.

Projections on current expenditures are assumed that work staff will reduce from 790 to 512, at the same time along with salary fund increase by 2007 average salary will increase two times. Current 29 sub-station decrease will allow reducing the staff and saving electricity.

Supplied electricity has been accounted for separately consumption routs and overhead consumption. The electricity cost by 2005 can be reached to normative indicators in the expense of vehicle and wires renovation (2.3 kWt.h per km for tram, 2.1 kWt.h for trolleybus). These indicators will allow reducing the total electricity consumption from 9.7 mln kWt.h in 2003to 8.7 mln kWt.h in 2007. The electricity consumption in administrative buildings and for renovation need to be added to these indicators (0.5 mln kwt/h annually).

Operating and maintenance expenditures are estimated annually 50 mln AMD during the whole program, which is the necessary amount to provide normal activity.

Total amount of capital expenditure is estimated approximately 160 mln AMD for 2003, 90 mln AMD of which is meant for renovation of infrastructure sector. These estimated capital expenditures are assumed for renovation of electro-transport parks and infrastructure sectors in 5 years, while vehicle renovation is not included.

As a result, electro-transport sector will have 154 mln AMD financial gap in 2003, which will reduce year by year coming to 80 mln AMD in 2007.

4.3. The analysis of the integrated financial rehabilitation project model *(Pessimistic scenario)*

Certain assumptions underlay the projections under the baseline scenario. The assumptions of the main scenario depend on certain exogenous factors, such as the precipitation level, import price of gas, etc. We took the more risky and crucial assumptions in these section and estimated the impact of there adverse occurrence. Finally, a pessimistic scenario of projections was developed combining the effects of their joint adverse occurrence. It indicates the impact of those factors on all four public utility sector and shows the total financial burden to be born either by taxpayers or consumers in case the actual results of reforms and other measures deviate from the program.

This section describes the pessimistic scenario and presents the analysis of its consequences.

Assumptions of Pessimistic Scenario

Energy/Irrigation

1. Vorotan-Arpa tunnel operates starting 2004. The total (accounting) losses for energy sector are estimated at 2,8 bln AMD annually at current tariffs, starting from 2004. The savings on electricity in irrigation sector will total to more than 1bln AMD (excluding O&M expenditures of Vorotan-Arpa tunnel.
2. It is assumed that the import price on gas will rise from current USD 79 up to USD 87 per 1000 CM starting from 2004 (VAT inclusive).
3. Energy generation mix will differ from the baseline scenario: in particular, the generation by ANPP and HPPs is estimated at 95% of what is assumed in the baseline scenario.
4. The tariff for electricity supplied to Artsakh will remain at its current level and the difference will not be reimbursed to the energy sector.
5. The repayment/restructuring of the arrears for nuclear fuel will not be financed from additional exports of electricity. It is assumed that the restructuring agreement for the nuclear fuel arrears will be signed on terms of repayment during 5 years, at 7% annual interest rate.

Drinking water sector

1. It is assumed that the drinking water tariffs will increase as it was envisaged by the programs approved by the Government Resolutions N440 of May 17, 2001(with one year delay) and N690-A May 23, 2002. I. e., water supply tariff for YWWC will be set at 55 AMD in 2005, while AWWC tariff will be set at the same level in 2004.
2. Besides, it is assumed that the drinking water companies will not be exempted from the environmental charges (for discharging untreated wastewater). Resultant from this the total charges are estimated at 340mln AMD annually, 180 mln AMD – for YWWC and 160 mln AMD - for AWWC.

4.4. Sensitivity Analysis and Pessimistic Scenario

The table below summarizes the results of the sensitivity analyses of various factors affecting public utility sectors.

Analysis of Pessimistic Scenario

Energy sector

First of all, the concept of tariffs on electricity, providing "reasonable" profits plus provision of certain reserves for possible risks is taken as a basis for the entire model, both baseline and pessimistic scenarios.

For this stage the level of "reasonable" profit is assumed 2400 mln AMD (excluding ArmElNet) according to the established tariff for 2002-03, which, affected by various factors, will gradually decrease during the next years unless the tariffs are adjusted accordingly.

Considering that the tariffs of ArmElNet are to be not lower than USD 0.015 equivalent before 2009, the increase in generation and transmission tariffs will be attained through the increase in end-consumer tariffs in order to provide for the reasonable profits of the entire energy system.

On the other hand, the baseline scenario projections of the energy sector are based on the assumption of favorable generation mix (HPP-ANPP/TPP generation), which, indeed, involves certain risks. Particularly, in the case of electricity generation by ANPP at 90% of what was assumed under the baseline scenario, the profit of the energy sector will decrease by 2200-2300 mln AMD. At the meanwhile, in case of HPPs generation at 90% of baseline scenario level, the energy sector will suffer losses of 1500-1600 mln AMD. In case generation by both HPPs and ANPP together at 95% of the baseline scenario, the total losses of the sector will be in the range of 1900-2000 mln AMD. The average for these three possible outcomes is 1800 mln AMD. Thus, it is necessary for this sector to accumulate certain reserves to avoid financial crisis in case one of the risk scenarios occur. The amount of the reserve is suggested to be equal to the above mentioned average of the three risks involved in the generation mix. The only source for the reserve is the electricity tariff adjustment. That is, the same year when the system is to earn profits lower than 2400 due to various factors, the tariffs should be raised to provide for total profits of 4200 mln AMD (2400 +1800 mln).

Under the pessimistic scenario, the tariffs set for 2003 will not be sufficient to provide for the minimum reasonable profit. The tariffs will need to be raised by 0.9AMD. For simplicity of presentation, that increase in end-user tariffs is added to the Armenergo tariffs, which needs to be allocated between the generating stations. In this case, the total profits of the energy sector will amount 4.26 bln AMD, whereas, otherwise, that would amount to about 800 mln AMD. Taking into account that the tariffs for 2003 are already set by the Energy Regulatory Commission the option of reflecting the necessary increase in 2004 tariffs.

In 2004, the necessary tariff increase will make up 0,1 AMD on average, otherwise the profits will shrink to 1.9 bln AMD. Obviously, tariff increase by 0.1 AMD does not seem to be reasonable enough, especially taking into account significant considerable increase in the previous year. In this case, the increase can be contemplated to include in 2005 tariff adjustment.

Similarly, it will necessary to raise the final tariffs by 1AMD in 2005, if the pessimistic scenario takes place. Otherwise, the profits of this sector will shrink to 440 mln AMD. In 2006, tariff increase by 0.5AMD will allow avoiding reduction of total profits to 2.3 bln AMD and subsequent tariff increase in the next year. However, the second option is to keep the tariffs unchanged for 2006 and increase the 2007 tariffs by 0.9 AMD.

It is worth mentioning that the described scenario for tariff increase is a model scenario, while in real life the increase can be implemented more smoothly. The described pattern of increases aims at demonstrating the tariff policy directions in case the pessimistic scenario takes place, or, more precisely, to assess the magnitude of impact various exogenous factors can have on the energy sector.

Irrigation

In general, despite the electricity tariff increases, the irrigation sector is in a more favorable situation starting from 2004, considering the fact that in case of Vorotan-Sevan tunnel operation additional 100 mln CM water withdrawals from Sevan for irrigation purposes reduces the electricity consumption of the irrigation sector by 58 mln kWt.h annually. While for 2003, the financial gap of the irrigation sector will increase by 400 mln AMD due to increase in electricity tariffs. The overall positive effect of the Vorotan-Sevan tunnel on irrigation sector without electricity tariff increase is more than 1 bln AMD. During 2004-2007, the cumulative net effect of Vorotan-Sevan operation and electricity tariff increase will amount to 1.6 bln AMD.

Drinking water sector

For the drinking water sector, the negative impact of the electricity tariff increase is combined with the lower increase in water supply tariffs. Thus, as a result electricity tariff increase during 2003-07 the total financial gap of YWWC will grow by 1.8 bln AMD as compared to the baseline scenario. At the meanwhile, the impact of water supply tariffs set at 55 AMD will be additional cumulative financial gap of 5.5bln AMD. Moreover, the gap will increase by another 900 mln at the expense of environmental charges. Meantime, in case of pessimistic scenario the taxes to be paid by YWWC will be lower by 1.4 bln AMD as compared to the baseline scenario. As a result, instead of 300 mln AMD cumulative surplus during the next five years in the baseline scenario, the YWWC will operate with cumulative 6.5 bln AMD financial gap.

For ArnWWC the cumulative negative impact of the energy tariff increases will make up 500 mln AMD in course of five years, and lower water supply tariffs will increase the financial gap by 1.2 bln AMD. The environmental charges will make up 800 mln AMD in the course of five years. For ArmWWC, the accrued taxes under pessimistic scenario will be lower by 400 mln AMD. Thus, the magnitude of cumulative financial gaps under the two scenarios will make up 2.1 bln AMD.

Urban Electric Transport Sector

The total cumulative impact of electricity tariff increases during 2003-07 on the Yerevan Subway will amount to 140 mln AMD, while for Yerevan Electric Transport – about 60 mln AMD.

Summarizing the analyses of the pessimistic scenario, the difference between financial inflows for all 4 utilities in baseline and pessimistic scenarios is 32 bln AMD, while only for Energy sector – 24 bln AMD.

TABLES

5. Institutional reforms and Restructuring of Public Utilities

Any financial rehabilitation program should be supported by adequate institutional and structural reforms. Without such reforms any financial program will fail. As a matter of fact, the main objective of financial reforms should be the clear definition of functions performed by different bodies in the sector and provision of necessary preconditions for the establishment of commercial relationships among them.

Institutional reforms of public utilities in the framework of the current project are aimed at revenue enhancement, expenditure optimization, and commercialization of the company's activities and improvement of their management. Separation of the Government policy implementation, management and regulating functions toward public utilities sectors by the State is the main pre-requisite for institutional reforms.

Revenue enhancement suggestions are related to the tariff policy reflecting costs of supply of services, as well as improvement of payment collection mechanisms. The latter includes private sector participation for implementation of payment collection, introduction and development of metering system, as well as development of mechanisms to ensure timely payments from budget-dependant entities taking into account their share in the total stock of accumulated arrears during the recent years. Mechanisms ensuring timely payments from budget-dependant entities, as well as VIP consumers are presented in Section 8.

Suggestions on cost optimization in all utilities mainly include the estimations of (i) gradual decrease of utilization of energy-intensive technologies, which do not need large investments or there are identified sources of financing for their implementation, (ii) cost reductions through debt restructuring, iii) the impact of private sector participation in public utilities sectors, which will promote efficient allocation of resources. From this point of view, it is necessary to pay attention to the development of the suggestions related to the private sector participation, since that is one of the best ways to enhance the efficiency of public utilities.

The clear delineation of management functions from the policy implementation and regulatory functions is an essential factor for the encouragement of private sector participation. The main way of this separation is viewed through balancing of the management and owners' interests through the establishment of board of directors combined with introduction of adequate project development, adoption, monitoring, evaluation, adjustment and reporting mechanisms, as well as providing for transparency and accountability of public utility companies.

5.1. Power sector

As a result of reforms being implemented in the energy sector in the recent years, from the former Armenergo, which included the entire energy system of the RA, generation, transmission and distribution companies were separated as close joint stock companies. At present Armenergo

implements the wholesale purchases and sales of electricity and intra-system regulations and dispatch.

After the privatization of "Armenian electricity networks" CJSC the only wholesale buyer of electricity shall be the ArmElNet purchasing electricity directly from generators. Taking into consideration, that ArmElNet, in fact, will be a monopolist in the Energy market of Armenia, the Energy Regulatory Commission should also regulate the terms and conditions of electricity purchasing contracts. The contracts should regulate in particular the terms of electricity delivery and fines and penalties for non-due execution of the contract signed between the generators and distribution company.

At the current stage of wholesale market development, it is recommended to establish an independent body which will be a party signing the contract and monitoring the execution of the contract. The founders of this independent body should be all participants of the wholesale energy market, it should be profit-oriented and its O&M expenditures should be financed by its founders according to their share in the energy market.

As the sole wholesale purchaser of electricity, the ArmElNet should bear all the risks connected to changes in electricity generation and its final consumption, as well as the risks related to the technological losses. It should also bear the commercial risks involved in payment collection, taking into account that under the current project no major increase for generation and transmission is envisaged provided that the baseline scenario occurs. Besides it incurs from the privatization transaction itself, which implies full commercialization of ArmElNet and exclusion of any interference of government bodies in its operations. Only those risks and losses incurred through the changes in generation mix because of the generators themselves, can be transferred onto the generators on a contractual basis. As it was already noted, the contracts and their terms shall be subject to regulation by the Energy Regulatory Commission. These changes need to be reflected in Amendments to the Energy Law and other laws.

Lately, Hrazdan TPP was transferred to the Russian National Energy company within debt-equity swap transaction. As a result, the share of Armenia in the energy sector has considerably decreased, and the functioning organizational structure no longer meets the requirements of the current situation.

Taking into account what was mentioned above, we recommend introducing corporate governance mechanisms and principles in two options. The first option supposes consolidation of all state-owned generating companies (ANPP, Yerevan TPP, Sevan-Hrazdan cascade, Vorotan HPP, Dzora-HPP) into a single unit with a single Board of Directors. Under this option, the generating units will operate as divisions. However, the main shortfall of this option is the inclusion of the ANPP into a single power-generating entity, which will hamper extension of

credits for non-nuclear generators from various international financial institutions. Despite obvious advantages of this option, including:

- Reduction in management costs,
- Improvement of the financial and technical parameters of the energy sector, increasing the efficiency of utilized resources through directing them at priority expenditures,
- Implementation of a unified sector development policy considering the interests of different generating units,
- Adoption of unified management procedures, including internal audit and reporting procedures, thus providing for more transparency in management.

The issue related to the ANPP might bring in the second option where the ANPP remains separate. In this case, considering the specifics of the Yerevan TPP (connection to the industrial complex in Shengavit district and Nairit and obsolete and worn out equipment in the plant), it is recommended to leave the Yerevan TPP separate, thus unifying only the state-owned HPPs. Under both options the role of the Board is crucial, which should be a professional board and include highly-qualified experts both on operative management of the power sector and overall financial management. The positions in the Board should be paid well enough – approximately at the salary level of the top management in big private companies in Armenia. Under the second option a unified Board of Directors can be established when the same persons are appointed in the Boards of all the companies.

The Board(s) of Directors will perform the following duties under the two options:

- Definition of tasks of companies or subdivisions for the first option,
- Introduction of internal procedures, adoption of company structure, appointment of department heads, etc., elaboration and adoption of information dissemination and financial reporting procedures to the public.
- Adoption of the annual budget of the company and its subdivisions, monitoring, evaluation and supervision.
- Preparation of the companies (or its divisions under the first option) to the private sector participation in the management of company (or its divisions) based on management contract or other methods,
- Signing the management contracts and removal of the corresponding subdivisions from integrated companies under the first option,
- Decision-making on sales of property and large transactions,
- Decision-making on issuance of bonds and stocks
- Approval of the Terms of Reference for the independent external audits and approval of the audit results

At the same time it is recommended to include “High Voltage electricity Networks” CJSC in the “ArmenErgo” CJSC, taking into account the following:

- "High Voltage Electricity Networks" CJSC does not purchase and sell electricity in the market: it rather provides transmission services at fixed tariffs.
- The transmission networks are not intended to be privatized because of their crucial importance to the entire sector.
- The regimes of operation of 220 kV net are planned and implemented by National Dispatch Center, as a result the efficiency of the technological process of electricity transmission is mainly determined by the regimes controlled by the National Dispatch Centre.

Before the integration of "ArmEnergo" CJSC and "High Voltage electricity Networks" CJSC takes place, it is suggested to separate the Energy Set-up branch from "ArmEnergo" CJSC and privatize it like other companies of energy sector.

At the first stage it is recommended to leave "ArmEnergoCommunication" to operate as a branch in the structure of "ArmEnergo" taking into account the necessity of implementation of SCADA project and the fact that the latter's task is to provide the operative-regulating connection.

It is suggested to integrate "Armenergonetproject Institute" and "Armhydroenergoproject Institute" in order to improve the management process of power objects and to reduce administrative and maintenance costs, taking into account the following:

- Necessity of developing and implementing unified technical policy,
- The tasks performed by one of the institutes is closely linked to the functions of the second,
- Similar divisions in both institutes.

The abovementioned measures will significantly reduce the role of both Armenenrgo and the Ministry of energy in various issues pertaining to the operative technical and financial management of the power sector companies. In particular, the Ministry of Energy will mostly focus on strategic issues related to the long-term development of the sector, as well as issues of wholesale market creation for electricity.

5.2. Water Sector

Creation of water resource management bodies (National water council, water resource management and preservation body, water systems management body, regulating commission, etc.) will essentially contribute to the development of balanced policies in the sector and their implementation, in contrast with the present super-centralized system, which can be useful only in the first stage as a transition phase from segregated management structure to the balanced and comprehensive one.

Simultaneously, the policy elaborating and implementing bodies will be responsible for the elaboration of programs aimed at further development of the sectors, measures enhancing their efficiency, and development of overall investment strategy including the sources of financing. Moreover, before provision of full cost-recovery of the tariffs for these sectors, these bodies in collaboration with various government agencies will also elaborate the parameters of the government subsidizing policy considering also various issues such as demographic, regional or social problems.

For the improvement of the management process, we suggest, as in the power sector to establish Boards of Directors, which will allow the top management of companies acting more independently from various agencies acting or implementing various policies in this sector. The Boards shall operate on professional basis, that is, the Directors should be appointed for a sufficiently long period and be paid well. This will allow introducing corporate governance methods in state-owned companies, which, on one hand, will enhance increasing the efficiency of companies, and, on the other hand, will increase the transparency and publicity of their operation. The major function of the Board of Directors should be discussion and adoption of financial programs at the company level, their monitoring, evaluation, supervision and organization of independent audits of the companies books, and, of course, the preparation of the company to contract out its management and operation. It is recommendable to start outsourcing various functions from relatively simple service contracts, then, after having certain experience and confidence in qualifications of contractors, the contracts can be extended to more complex – management or operation – contracts.

The main principles of the Water Code of RA are private sector participation in the water sector operation and management sphere owned by the State which is based on trust management, concession contract, as well as leasing out to a commercial organization. Besides, the terms of water system usage (operation) and management in the irrigation sector differ from that of in drinking water sector. In fact, either WUFs or State Water Committee are responsible for the management in the irrigation sector. The exclusive right of WUFs to manage the irrigation system will restrict competition and commercialization of the sector.

Besides, in case of water sector management in the irrigation sector the right for sector operation (usage) may be transferred to private sector on a competitive basis for a five-year term, following one of the methods mentioned above. Such restriction won the term of the contract will not support the orientation of the contractor on more long-term problems and issues, and activities of contractors will be rather directed towards short-term, discrete and day-to-day operating aspects, rather than maintenance, preservation and further development issues. Thus, it is recommended to extend the duration of Operation Contracts advancing their time limits to that of management contracts in the drinking water sector.

Furthermore, it is necessary to allow the WUFs to contract out the operation of their irrigation systems to private operators, since, especially, during the initial phase, most of the WUFs will lack the necessary skills and qualifications to operate the systems themselves. In this regard, we would recommend amending the Water Code and the Law on Water Users Unions and their Federations by including there the procedures and methods the WUFs can involve private companies in operation on.

The abovementioned law also foresees the creation of a Regulatory Council for WUUs and WUFs. Considering that the WUUs and WUfs are self-regulating entities, the rationale of the creation of this body requires additional discussion.

Irrigation Sector

The following measures are suggested to be implemented in this sector with regard to the continuation and enhancement of institutional reforms:

Revenue enhancing measures

The most important factors affecting revenues are the tariff policy of the government in this sector and improvement of payment collections, which we view possible to attain through improvement of management in companies and private sector participation in various forms.

The implementation of tariff policy should be transferred to the Regulatory Commission as soon as it is possible, which is "an independent body implementing management functions"[7]. According to the transitional statements of the "Water code" of RA, the Government is to submit the draft law on the Regulatory Commission within 6 month after adoption of the Water Code. The main cornerstone of the tariff policy in irrigation sector shall be the gradual transfer to differentiated tariffs, with parallelly providing for the transparency of tariff policies in the long-term.

- The tariff increase scenario assumes that irrigation tariffs will be raised up to 5.2 AMD in 2004 and then, they will rise by 1 AMD every year up to 2006. It is suggested to set the tariff 7.5 AMD for 2006, and 8.8 AMD in 2007, which is sufficient for covering current costs.
- According to the results of this project, it is not realistic to include depreciation costs into irrigation water tariff during the coming 5-6 years. However, it is necessary to estimate the full cost-recovery tariff during this period, thus, giving the agriculture sector the signals about the level irrigation tariffs will be raised to in future. Fixed assets revaluation should be used for tax accounting purposes starting 2003.
- Methodology of zonal tariffs' calculations mainly depends on the availability of adequate metering systems, quantity of their levels and so on. Parallel to metering system improvements, it is necessary to gradually shift to zonal tariffs, which reflect irrigation supply costs of the river-basin units more precisely.
- Introduction of zonal tariffs, as a first step toward the differentiated tariffs. In those communities, where irrigation water is supplied only by pumping from deep wells, it is necessary to establish a separate tariff for irrigation water supplied from the former community wells. It will help to design the optimal subsidizing mechanisms, which will be later used in different regions, considering their peculiarities.
- Development of differentiated (so-called zonal) tariff policies in combination with government subsidizing policies;
- Establishment of more realistic and substantiated tariffs at WUA and WUU demarcation points.

Institutional Measures to Improve Management of the Companies

The reforms in management will be directed, on one hand, enhancing the commercialization and improving the payment collections, and on the other hand, will be aimed at cost optimization and more efficient utilization of available resources.

- Establishment of management boards, which will ensure application of management methods aimed at further rehabilitation and development of companies. Management

[7] "Water Code of RA", Adopted by the National Assembly of RA on 04 June, 2002

boards should be authorized to develop annual and medium-term projects, organize monitoring of their implementation, etc.

- Independent annual audits of the financial record of the companies;
- Encouragement of private sector participation in the management and operation of state-owned companies. It is more expedient to start this process from outsourcing the payment collection function to private companies, the fees (payment) of which should be linked to the level of their collections. Subsequently, it will be possible to implement more advanced options for contracting the management out: on management, leasing or concession contracts. One of the major functions of the Board of Directors will be the preparation and organization of the entire process of private sector involvement.
- On the other hand, current WUUs and WUAs do not seem to have adequate skills and professional staff to run the associations and unions. Thus, it is necessary to encourage the outsourcing the internal metering and payments collection functions of WUUs and WUFs to private companies. In short and medium terms, the operation and maintenance of the sector should be carried out by the "parent" enterprise, since these functions require certain professionalism and technical equipment. Gradually, these functions may be transferred to private companies.
- During the first stage (up to 2007), the capital expenditures will still remain financed by the Government – mostly through credits of the WB and other IFIs. Afterwards, when the systems will reach a certain optimum operation level, some depreciation charges, as a source of capital investments financing, should be included in tariffs. The amount of amortization included in the tariffs will depend on the overall objectives of government policies in the agricultural sector, as well as availability of alternative (non-government) financing sources for capital expenditures and their terms.
- Implementation of centralized energy saving and efficiency-enhancing measures should be the cornerstone of investment projects financed by the Government.
- Development and introduction of a more flexible system for payments collection considering seasonality of agriculture, i.e. discounts to be provided for those who have made prepayments for the next irrigation season, or those who will pay the bills equally for each month.

Restructuring/Cost Optimization

- Development and introduction of a metering system according to costs of 13 river-basin units and their main indicators (losses, payment collection, etc.) which will allow to reflect more precisely water supply costs in differentiated tariff system to be developed later;
- Gradual increase of average salaries in the sector, while the issue of optimizing the number employees should be discussed for each of the units separately;
- Utilization of results of fixed asset revaluation according to the river-basin units;
- One-time restructuring of receivables and payables, and afterwards, implementation of the steps directed to prevention their accumulation. However, if such debts are accumulated, the Government should avoid debts financing, provided that the financing

rehabilitation measures were implemented in accordance to the programmed, in particular with regard to government subsides.

5.3. Drinking water sector

Drinking Water Sector

The following measures are suggested to be implemented in this sector with regard to the continuation and enhancement of institutional reforms

Revenue Enhancement Measures

Recommendations on Revenue enhancement measures, in general, coincide with those for the irrigation sector. However they differ in the principles of tariff policy.

General statements on tariff policy

The main emphasize of the tariff policy should be a shift to the cost covering tariff in the shortest time-period (including current and capital costs). On the other hand, it should be taken into account the possible social impacts of tariff increase. Moreover, the size of tariff is interrelated to the condition of a metering system: without an adequate metering it is impossible to correctly estimate the costs, whereas, tariff increase will serve as an additional stimulus for installation of meters at end-consumers. Thus, taking into account the last statement, we suggest raising tariffs from the second half of 2004 up to the level that the consumers paying on the basis of meters records will pay approximately the same amount as now. This will encourage meters installation, and, subsequently, loss and consumption reduction, as well as elimination of leakages in the distribution networks. Such "indifference" level in case of Yerevam WWC amounts to 70-72 AMD per 1 CM, while for ArmWWC it equals to 60-62 AMD per 1 CM.

In case of Yerevan WWC establishing a cost covering tariff from the second half of 2004 will help to refrain from direct subsidizing, and at the same time, starting from 2005 - provide preconditions for financing capital expenditures of about 900-1000 mln AMD at the expense of the company's own resources (the amount considers the actual collection level).

In case of Arm WWC the Government will continue subsidizing capital investments, since only in 2006, it will be possible to finance capital investments of annually 400-500 mln AMD at the expense of the company's resources.

However, it is necessary to estimate, first of all, the volumes of capital investments in the whole territory of Armenia and to identify priorities, and only after that develop investments projects naming the financing sources and terms.

Then, after metering system is in place, and costs are optimized, it will possible to define the level of the "full" cost-recovery tariff, which will include depreciation corresponding to the necessary investment volumes. In all probability, in case of ArmWWC this can be implemented in 2006-2007, while for Yerevan WWC – relatively earlier.

It should be mentioned, that from 2003 annual depreciation resultant from Yerevan WWC and ArmWWC companies' revaluation of fixed assets should be used for taxation accounting purposes.

After installation of a metering system in the drinking water sector it is more expedient to shift to differentiated tariffs. It is suggested to use a single tariff for Yerevan WWC (except for non-urban and wholesale consumers), since it is an integral system. In case of ArmWWC, it is more expedient to introduce a system of differentiated tariffs and to establish an average tariff for Arm WWC. On the whole ArmWWC service territory, the average tariff (ArmWWCtotal costs/supplied water volume) should be used for the consumption up to a life-line level (for example, 70-100 L per person per day). If per capita consumed water exceeds the life-line limit, the cost covering tariff should be used for the excessive consumption volumes only. The Central office of ArmWWC will be responsible for re-distribution of financial resources among different branches - directing cash resources from branches operating with cost prices lower than the average to the branches with higher costs, at the same time, maintaining economic attractiveness of different units in the framework defined by the Regulating Commission.

The necessity of such a complicated tariff system for Arm WWC will become evident from the point of view of contracting out the management. Nevertheless, taking into account imperfections of the metering systems, it is too early to outline specific parameters for the tariff system today. However, it will be possible to implement in 2005-2006.

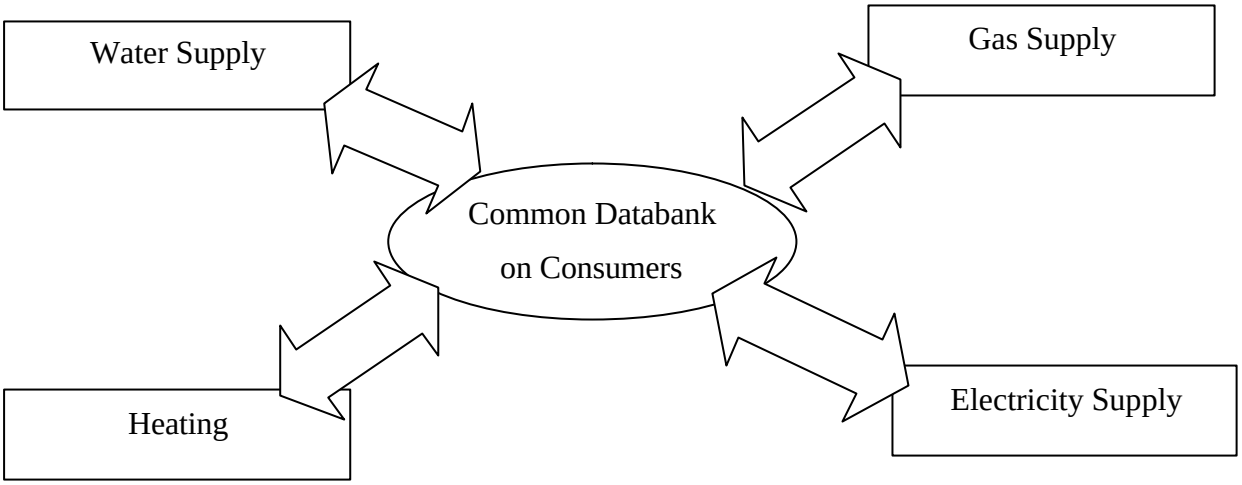
Special attention should be paid to Community water supply projects implemented by the German Development Credits Bank (KfW) in Armavir marz, and anticipated similar projects in Lori and Shirak Marzes. If these territories will be taken out from ArmWWC, then water supply cost price in ArmWWC territories will rise artificially – from the present 62 Amd to 99AMD because in both Lori and Shirak water supply systems appear to be among the cheapest ones, at least - lower than the average for ArmWWC. These regions can be included into the abovementioned "average-tariff-for-lifeline" system, as well, and then, as mentioned before, to use the average tariff for the consumption up to the life-line level, and the local tariff – for the consumption higher the life-line. However, the final decision can be made only after the second stage of this program and after the results of feasibility studies of the anticipated projects in Lori and Shirak.

Along with the diversified tariff system, the Government should develop regional subsidizing policies based on demographic and regional priorities (earthquake zone, near–the-border settlements, etc.). The issue of investment requirements estimation is especially vital for ArmWWC, which will assess not only the size of investments needed, but also will outline the investment priorities depending on the expected outcomes.

Other Revenue Enhancement Measures

Apart from the tariff policy, the issue of clarifying the consumer base for the drinking water companies is yet another crucial factor. A databank on drinking water consumers should be developed on the basis of verified list of existing consumers. Taking into account that the majority of consumers will simultaneously be consumers of other utilities as well (electricity, gas supply), it is more recommendable to create a unified consumer databank for all major utilities. In this case the costs of databank development can be shared by the companies in different sectors. The consumer base will be a stored in a single database, and the sectors will have

interfaces with those entries in the main bank which are consumers of that particular service. Then smaller software should be developed to enable different utilities in order to store the consumption values for individual consumers, calculates the bills and payments for the bills.



Measures to Improve Management/payment collections/Cost optimization

- Establishment of management boards, which will ensure application of management methods aimed at further rehabilitation and development of companies. Management boards should be authorized to develop annual and medium-term projects, organize monitoring of their implementation, etc.
- Encouragement of private sector participation in the management and operation of state-owned companies. It is more expedient to start this process from outsourcing the payment collection function to private companies, the fees of which should be linked to the level of their collections. Subsequently, it will be possible to implement more advanced options for contracting the management out: on management, leasing or concession contracts.
- The process of private sector participation has already started in this sector through trust management contracts of separate branches of YWWC. This can be viewed as an initial step to the overall objective of private sector participation, while for the next step the sample contracts and its terms should be developed and elaborated more along with the advancement of the metering system introduction.
- The next step of private sector participation should be their involvement on conditions that they will also do capital investments – in accordance to the overall investment policy adopted for the sector, without segregation of the interests of the companies and implementing of joint sanitary and normative policies.
- The role of condominiums shall be very crucial in drinking water sector, especially concerning the O&M of intra-block pipes and as a wholesale purchaser at a block level. This will both enhance the elimination of intra-block losses and improve payment discipline.
- With regard to institutional reforms, it is important to outline management options for this company after 2004. Presumably, after the end of the contract the “principal” company should possess the necessary skills to manage the company itself. Otherwise,

making or extension of such a contract will be an additional burden on the state budget or tariff. In this regard, it is necessary to undertake measures to clarify if it is necessary to involve a new operator, or the staff will be able to operate the ArmWWC by itself.

- Gradual increase of average salaries in the sector, while the issue of optimizing the number employees should be discussed for each of the units separately.

5.4. Urban Electric Transport

Recommendations on the Overall Policy in the Sector

We recommend developing an integrated program for the above-the-ground electric transport and the subway in Yerevan in order to improve their competitiveness and raise number of passengers/customers of these two companies. The integrated program should include not only combination of their service sphere through route optimization, but also view the two sub-branches of the urban transport as two interrelated components of the same system from the point of pricing policy. The route schemes of public transport in Yerevan should stretch from the more frequently-used subway stations to the suburbs.

Besides that, certain renovation and optimization measures in these two sub-sectors should be taken, which will provide additional revenues and/or reduce expenditures.

Though this project is supposed to develop only financial rehabilitation project of Yerevan electro-transport, we find necessary for the Government to develop the general government policy toward urban transport sector and it is a program of its implementation, which will take into account directions of passenger flows which emerged during the recent years, daily traffic peaks and demand for various modes and directions of transport. The policy and program should pay attention to the compatibility of routs and prices, and also consider environmental aspects, which is an essential factor in decision-making in favor of electric transport.

Taking into consideration the special importance of the subway and its inflexibility, we can not expect it to be profitable in medium term period. However, if compared to above-the-ground electric-transport, which, in case of large losses, can be liquidated, for the subway all the available resources must be utilized. The purpose of financial rehabilitation program for subway is to estimate annual losses of the financial gap arising after efficient use of all available resources, which will be predictable and acceptable for the Government. It will be an amount that the Government will be ready to pay for having this mode of public transportation.

For the above-the-ground electric transport sector, too, the most efficient use of available resources is estimated (including sales and/or lease of non-occupied or free premises and territories after consolidation of the depots, as well as more active policy of advertising placed on vehicles, improvements in overall administration of the company). The additional revenues received in the early stages are supposed to invest in vehicle renovation and those non-recurring expenditures that will increase reliability of electric transport operation and improve the quality of its services, thus, gradually making this mode of transportation more preferable for passengers. Both for the above-the-ground electric transport and for the Subway an essential

issue is the full reimbursement for the transportation of free-of-charge passengers. Measures to improve discipline and control in this sector are also very crucial to provide for its financial rehabilitation.

Financial rehabilitation program aims at presenting the sector in a transparent manner, so that the gap resulting from its operations combined with revenues from available sources will be within the range of predictability for the Government, and will be the acceptable price to pay for maintaining this mode of public transport.

Revenue Enhancement Measures

Taking into account fixed costs of the Yerevan subway, for minimization of the financial gap it is necessary to maximize current revenues. What concerns the current expenditures, they are already quite low as compared to other FSU countries – mainly on salary level and the number of employees. An issue remaining out of consideration of this project is the development of certain benchmarks of electricity consumption or localization (adjustment) of existing ones for the Yerevan Subway, taking into account the loads of vehicles in the Yerevan Subway, number of wagons attached to one train and the relief of Yerevan.

Revenue enhancement measures as a result refer either to rising the passenger fare or provide the growth of the passenger flows, or the combination of these two. The main scenario projections include passenger fare rise(from 40-50), which will not affect the passenger number significantly and will keep on the recorded tendency of the previous two years. The inquiries made by the consultants team shows that the passenger fare reduction together with optimization of above the ground transport routes and the increase of their work reliability will increase the volume of the underground and above the ground passenger flow. Only 38%(47 from 125)of the responders take the subway 7 times a week per person on average. To the question how often they would take it in case of the fare reduced to 20 AMD they responded 9 times a week on average. The 26% (20respondents or 16% of the total sample)of those who currently do not take the subway would go 4-5 times a week in case of fare reduction . To the question would they take subway oftener in terms of fare reduction and above the ground transport fare of 50AMD the current takers would 12 times a week on average. Meantime, the 32%(42% of non takers and 26% of the total sample) passengers who don't take subway would begin to take it 6-7 times a week. The 33% of the responders (26 responders) who do not take subway now in no terms would do it. As a result of this, in case of 20 AMD 340 flow of the current takers will reach to 516 and together with other means of above the ground transport -789.

This inquiries prove the necessity to combine the underground and above the ground transport means from the route and pricing policy standpoint. That is, if the underground and above the ground transport supplement each other, including the combined ticket system , some passengers will agree to bear the inconveniency of switching two transport for saving some money on the passenger fare. Thus, for final and thorough decision making it is necessary to conduct a professional survey involving larger number of responders and some questions relating to underground service quality.

Besides, the measures aimed at increasing revenues from non-principal activities, it is necessary to develop a program for the increase of passenger flow. Increased passenger flow

will, certainly, make advertising and leasing in subway stations commercially more attractive. Additional revenues can be provided to the Yerevan Subway if it performs the advertising and leasing out activities itself, or outsources these activities through a tender. These are measures that can be taken now, and the results will be tangible almost immediately.

Among the questions relating to the Subway, the solution of which is beyond the scope of this project, is the pumped-out water treatment (sale). Annually about 25-28 mln CM water is pumped out to drainage system from underground. First of all it is necessary to define the quality of the pumped out water and the purpose is can serve for. The water can serve for irrigation of Yerevan parks or supply water to fountains and water pools after certain treatment if not for drinking purposes.

For the above-the-ground electric transport, too, estimates of all resources available are included in the projections, in particular, sales or leasing-out the premises which will be freed after consolidation of the four parks, more aggressive ads attraction policies, as well as improvement of administration and discipline in the company. Running regular checks on routes will significantly improve the revenues of the company through identifying the "real" passenger flow.

The revenues from these measures in the first stage should be directed at repair of existing vehicles and equipment and other non-recurrent expenditures that will allow improving the reliability of these modes of transport, which, in the next stage, will attract more passengers to these modes of urban transport (the estimates of these investments are included in the projections). At the meanwhile, the issue of modernization (replacement) of vehicles is not considered: that, along with its financing sources, should be discussed based on the Urban Transport Study.

Measures to Improve Management/payment collections/Cost optimization

- Establishment of a management board, which will guarantee application of management methods aimed at development and further strengthening of the companies in this sector. One of the main tasks of the Board should be the preparation of the company to private participation in the management
- Encourage private sector participation – including the current staff of the companies, which will commit to implement the Financial Rehabilitation Program, and the motivating factor will be the provision of the agreed state subsidy despite the magnitude of actual financing gaps.
- Development of benchmarks on electricity consumption per 1 km for the Yerevan Subway taking into account the average number of wagons, the average passenger load, etc.
- Salary increase, which will ensure qualified personnel involvement and retention in the sector: for the ElectroTransport CJSC – downsizing the current staff from 790 to around 515.
- Consolidation of the two tram and trolley-bus depots into one, which will help to reduce overhead expenses and the number of employees and simultaneously, raise the salaries;

- Improvement of administrative and disciplinary actions through disclosure of “real” passenger flows by regular checks;
- Reduction of the number of electricity sub-stations.
- Elimination of routes running at financial losses, optimization of routes,
- Gradual reduction of electricity expenditures up to the norm level due to increase of efficiency resultant from renovation works, as well as improvement of internal administration.

6. General Approaches to the Assessment of Social Impact of Reforms in Public Utilities

Payments for utility services take a significant part of household expenses. According to the sample analyses conducted in 1998-99 by … of RA an average family has spent during this period about 15% of its budget for public utility services (about 1826 AMD per person monthly).

According to another sample analysis, expenses for utility services amounted to about 18% of expenses for poor families and 11% - for non-poor families. The same analyses proved that the payment level by poor families was well lower that that of non-poor families (poor families paid for only 66.7% of the consumed amount of utility services, while non-poor families paid for 78.5%). Any financial rehabilitation program, the final objective of which is the provision of full cost-recovery of expenditures through tariffs (except for the electric transport sector, which will continue to receive subsidies in foreseeable future), as a rule, will enlarge household expenditures for utility services. Becoming from poverty alleviation prerogative, implementation of financial rehabilitation programs should not negatively affect poverty; therefore, the social impact estimates of such programs are important for developing adequate social policies.

The following 3 factors are important for estimating the possible social impact of reforms:

- Tariff increase projections and their impact on the structure of household expenses;
- Payment level increase and its impact on the structure of household expenditures;
- Improvements in service quality and quantity, availability and reliability of public utility services and its impact on volumes and structure of household expenses;

6.1. Power sector

No electricity tariff increase is projected in 2002-2007 under baseline scenario. On the contrary, taking into account expected inflation, the real tariffs will even reduce in future. In 2002 the real tariff equal to 93.5 % of the tariff, then it will reach 86.9% in 2005, and 71.2% - in 2007. Therefore, under baseline scenario, the real expenses for electricity will reduce. Under baseline scenario it is projected that electricity consumption by residential consumers will increase by 3%, which is much lower than GDP and household income growth rate. So, the share of payments for electricity in the structure of household expenses will further reduce (assuming 90% payment collection).

It is projected that payment collection level for consumed electricity by residential consumers will reach 90% in 2002-2007 instead of 85.1% in 2001, which means it will raise by 6.7%. Thus, the mentioned increase will not have any social impact.

With regard to the enhancement of availability and supply reliability, then for about 100% of population electricity is available after 1995, when the power crisis was overcome. So, this factor too will not have any negative social impact. Thus, there is no need for additional social measures to implement in the power sector.

6.2. Drinking water sector

According to the financial analyses of recent years, effective average tariffs in Armenia (53 AMD per 1CM in 2000) provide for current cost-recovery and certain profit in the sector. According to the baseline scenario no real tariff growth is projected for Yerevan WWC before 2004, and for Arm WWC – before 2003. Vice versa, taking into account inflation projected by the baseline scenario, the real tariff will reduce during this period. Water removal and sewerage tariffs for both ArmWWC and YerevanWWC will remain unchanged for the projected period and will reduce in real expression taking into account the inflation projected by the baseline scenario.

In 2004 water supply nominal tariff for Yerevan WWC will raise by 19.5%, and for ArmWWC – by 29.1%. Considering the projected inflation the real tariff will rise by 6.6% for Yerevan WWC, and by 17.3% - for ArmWWC. The inflation will neutralize the impact of tariff growth, so the real tariffs will be the same as in 2000.

The main financial problem of the sector is due to the very low payment collection (26.5% for Yerevan WWC in 2000, of which 10.8% from residential consumers, and 37.9 and 28.2 % correspondingly for ArmWWC). The baseline scenario assumes a significant increase of payment collection level: 25% in 2002, 52% in 2003, 82% in 2004 and 90% in 2007 for Yerevan WWC, and 47%, 61%, 68% and 90% correspondingly for ArmWWC.

If the mentioned levels are reached, water supply nominal expenditures for a four-member-family will equal to 420 AMD in Yerevan in 2002 (180AMD –in 2000), 874AMD in 2003, and 1470 AMD in 2004, which is a significant increase. For ArmWWC water supply nominal expenditures will amount to 414 AMD in 2002, 695 AMD in 2002, 1060 AMD in 2003, and 1180 AMD in 2004. Special old-age pensions and poor family benefits should be increased accordingly to counter the effects of suggested program.

According to the different pilot projects real water consumption is much lower (about 150-180 L per day) than the fixed estimate (250L). It is stipulated by the large losses in water networks (in YerevanWCC networks – 71.8%, and in ArmWCC networks – 51.1%). If the loss reduction estimates presented by the scenario are reached and if water meters are installed, water quality will be enhanced and water supply duration will be essentially extended (up to 13-24 hours, while presently water supply duration is 8 hours in urban areas, and 14 hours – in rural areas).

In the second stage of the program, aiming at reduction of cross subsidies, it is expedient to discuss issues on tariffs further differentiation. In this case water supply social impact estimates also should be differentiated according to the tariffs and supply conditions.

6.3. Irrigation and urban electric transport

At the present stage of analysis, for different reasons, it is rather difficult to estimate the social effects of the suggested financial rehabilitation program on these sectors.

On one hand, irrigation water is a production resource, and for estimating the effects of tariff change it is necessary to estimate the impact of this change on the cost prices and prices of agricultural goods. On the other hand, at the present stage, regional and technical differentiation scheme is not yet completely developed, and therefore it is impossible to estimate the real impact

of differentiation on production cost price, its structure and financial indicators in agriculture sector.

With regard to the electric transport sector, due to the lack of necessary information, it is impossible to estimate the social effects of the suggested program. On the other hand, the electric transport expansion scheme is not yet developed, and, therefore, it is impossible to make any projections for this sector.

7. Basic issues for systemizing the public service payments from the state budget

1.1. Repayment/Restructuring options

Based on the results of completed analyzes, this section outlines the necessary measures to reduce the amount of receivables and payables accumulated in 4 involved sectors. Suggestions are given to help the companies to avoid accumulation of future debts.

Analyses of the reasons and structure of the involved sector's receivables/payables substantially shows that there are common reasons for the accumulation of payables in all sectors.

First of all, it is necessary to take attention on financial management bodies and their authorities' activity and implement measures to improve them.

In order to avoid further accumulation of receivables/payables, as well as to have an efficient process of payables repayment in place, it is essential to implement the following initial measures in the companies:

- receivables/payables inventory taking,
- mutual reconciliation of receivables and payables,
- Elaboration of time-tables for repayment,
- Implementation of additional measures on payables repayment with problematic debtors.
- Re-calculation and write-off of doubtful receivables/payables according to the procedures defined by legislation of RA.

Studies on cash flow of the companies, and proportions of receivables and payables existing liabilities show that one of the possibly most efficient method is the reciprocal netting out of obligations.

These measures aim to free the companies from receivables and payables by restructuring/repayment transactions.

That is why it is necessary to help the companies to get free of payables through one final intervention by the government, and also regulate cash flows of the companies. However, as mentioned before, the payables restructuring and repayment will be viewed as a one-time process.

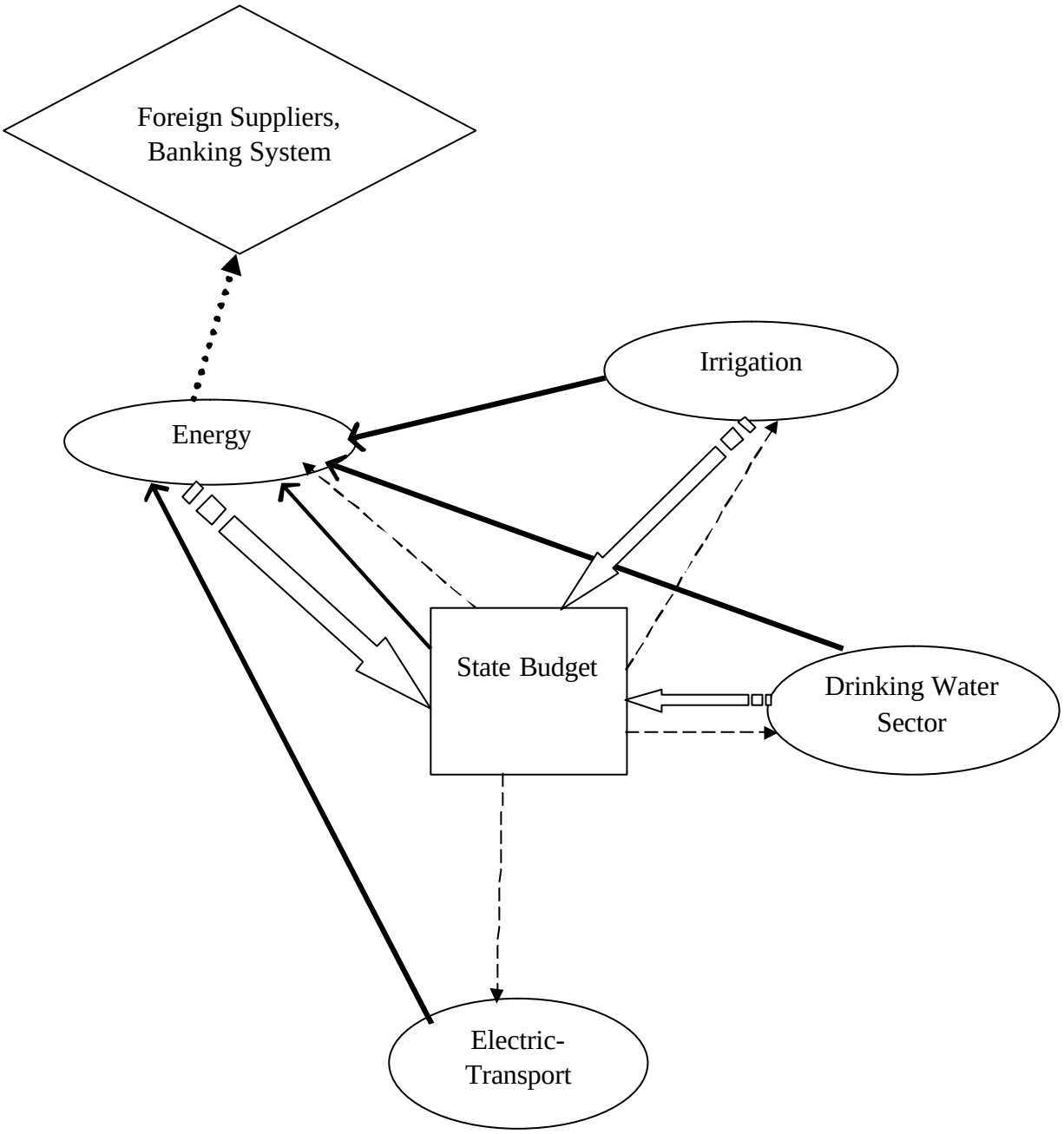
Suggested measures give the opportunity for drinking water, irrigation and electric transport[1] companies to be released of 48,703.5 mln AMD (without energy sector) payables and 33.751.8 mln AMD (without energy system) receivables. Moreover, in order to repay above mentioned liabilities and payables, additional 10,774.8 mln AMD (13.3% of repayment liabilities and payables) will be needed from the Government budget. The additional 11 bln AMD for payables repayment virtually will not bring to an enormous increase in annual deficit, since th subsidies will be paid back in the form of taxes from the energy sector.

1

Thus, the repaid/restructures obligations will consist of:

- Current tax liabilities and arrears on taxes – of 10,7 bln AMD (excluding the energy sector)
- Arrears on payments for electricity – 21,6 bln AMD (excluding the energy sector)
- Budgetary loans – 12,8 bln AMD (excluding the energy sector):

The recommended chains of netting-out transactions are presented in appendices in more details.



1.1. Mechanisms to Ensure Timely Payment from VIPs and Other Consumers Financed from the Budget

According to the analyses of the arrears accumulated in public utilities' sectors, the major part of the debtors are budget-dependent entities. If the solution of the problem for directly financed consumers (budget organizations) is relatively simple, the problem of the consumers that supply public utilities is more complicated. In this respect the development of principles and mechanisms, which will help to distinguish the requirements for the state budget for public utilities from its requirements for financing state institutions, is essential. The demarcation is to be based on the necessity for regular supply of the services or on the halt of these services in case of not covering the payments.

In order to avoid debt accumulation in future and elaborate mechanisms for timely payments, the main suggestions refer to insuring payment mechanisms for budget -financed institutions. Coming of this, such consumers may conditionally fall under three classes; V.I.P. consumers, budget institutions and organizations that involve activities by state order .The three groups should be treated differently, however, the basic task is to address the consumers that fall under the first group. The basic outlines for differentiating the approaches to the consumers of these three groups, as well as the main characteristics for defining the type of the consumers are stated below.

V.I.P. consumers

V.I.P. consumers are to be considered those, whose activities relate to issues such as national security , defense and the provision of services that are of vital importance , or else their energy halt can cause environmental disaster (or may result in financial losses).In this respect the main problem is the formation of a list of the V.I.P consumers by the Government of Armenia, which should be updated periodically.

For such consumers it is necessary to gain the consent of the energy distribution company on the regular provision of energy.

On the other hand it is necessary to provide regular payments for energy consumption from the state budget .The decision of Armenian government number 1205 dated August 8, 2002,"On Procedures warranting electricity payments for V.I.P consumers", is to be used for this group of consumers.

Budget Organizations

Generally the budget organizations, that are financed by the state budget for the electricity consumption, for programming the budget of the next year, first of all must present adequate reports about the energy consumed then do the monthly payments. At the same time for evasion of excess expenditures, it is necessary to appoint financially liable officers from the staff of the same organization.

The organizations which provide services only to the government should also be included in this category (asylums, schools, tuberculosis dispensary, etc).

Organizations providing services to the Government

To this class belong the organizations that provide services within the state orders (let alone the cases mentioned above), or else receive subsidies from the state budget for financing of their current deficits. These consumers should be viewed as private, commercial consumers for the public utilities, and there is no need to develop special mechanisms for their payments, and the energy supplier has the full right to stop the energy provision in case of delay in payments for the energy consumed.

These measures will also positively affect the further commercialization of the public utilities sectors through systemizing

8. *Conclusions*

Summarizing the findings of the present project, we can conclude:

1. The public utilities, despite various reform programs implemented, still remain the most inefficient sector of the economy.
2. The analyses carried out within this project evidence the necessity to address the problems in all public utilities' sectors in an integrated, interrelated manner and to develop their financial rehabilitation programs based on that approach.
3. Projections of the cash flows of the 4 sectors for the coming 3-5 years aim at gradual reduction of the government subsidizing, or, when possible, cease it completely though implementation of adequate tariff policies, institutional reforms and cost optimization.
4. In this regard, the main feature of the tariff policy in the water sector should be gradual introduction of diversified (zonal) tariffs. The system of diversified tariffs – provided that an adequate metering and accounting systems are in place – will provide for the clear reflection of costs of irrigation water supply in the given region in the tariff. Diversified tariffs, along with adequate subsidizing and social policies, will not only provide for further improvement of the quality of the service, but also enhance the attractiveness for the private sector to participate in the sector in one or another method of public-private partnerships.
5. One of the main components of the financial rehabilitation program for the public utilities will be the restructuring or repayment of old debts – including the debt restructuring transactions elaborated by the Government of Armenia – and the measures to prevent further accumulation of debts in these sectors. This component of the program will not only allow relieving the companies from the burden of accumulated huge debts, but also efficiently manage their cash flows in future.
6. The cornerstone and the basis for the present financial rehabilitation program are the recommended institutional reforms of the sectors, which are, in fact, the preconditions for financial rehabilitation of companies.
7. Simultaneously, a unified investment policy should be developed for the public utilities sectors. Subsequently, the policy should be implemented in a centralized manner at the level of sectors regardless of the degree of private sector participation. The investments can be financed by the government, IFIs and/or private funds.
8. The possible social impact of the recommended reforms is assessed both from the point of their impact on the household budgets (including the poor), and also from the point of sustainability of the services, their quality and access to services for households.
9. Risks involved in the implementation of the financial rehabilitation program are assessed along with consequences of their occurrence. The results highlight the

necessity of comprehensive reforms in these sectors and further monitoring of their pace. This will allow the Government and, in general, the taxpayers, to avoid significant expenses and undesired social consequences.

A crucial precondition of the successful implementation of the IFRP is the continuous monitoring and adjustments to the overall program resulting from actual indicators and changes in external environment for the public utilities. In this regard, endorsement by the Government of this program, along with the development of a timetable of measures will become an essential step toward further rehabilitation of the public utilities.

The objective of the current project is to identify the conceptual and strategic directions of the public policy, financial rehabilitation programs and institutional reforms to provide for management improvement in the mentioned sectors of public utilities. Development of similar programs at the level of companies in these sectors, which will address also issues like internal structure, division of functions, internal resources available, organizational and management structures, will be the logical continuation of this project, since the companies themselves are the targets and the bearers of the financial rehabilitation programs.

9. Appendices

Appendix.1. Explanations of projections (baseline scenario)

Power sector

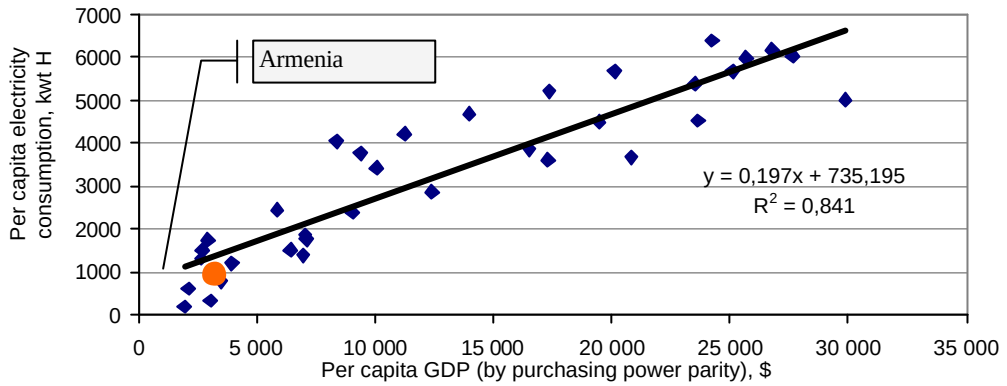
Electricity demand forecast for 2002-2006

Electricity consumption demand forecast has been done according to separate consumption groups.

Residential consumers

Analyses show that electricity consumption and GDP dynamics are interrelated. Particularly, analyses of per capita GDP (by purchasing power parity) and electricity consumption volumes in 35 countries prove that there is a strong correlation between them as shown in the Figure below.

Interrelation between the per capira GDP and electricity consumption



As illustrated in the figure, per unit GDP increase results in energy consumption increase by 0.197 units. According to the presented formula electricity annual consumption may increase by 2-2.5% annually.

However, in the scope of this project a more conservative scenario for electricity consumption – with 0.5% increase rate is adopted taking into account gasification of residential buildings and recently adopted heat supply program.

Industry

Dynamics of electricity consumption had a growing tendency in recent years: in 2001 electricity consumption increased by 1.7% compared with the previous year, and in 2000 – by 3.4%. According to the results of sample estimates analyses (July 2002) conducted by the National Statistical department of RA on electricity generating and consuming companies the most energy intensive branches of the industry are mining, chemical industry, metallurgy, food industry and non-metal mining industry, which all consume more than 90% of the produced electricity (Table 1).

Table 1. Electricity consumption structure by branches in 2000-2001

	2000	2001

	Thous. KWt H	%	Thous. KWt H	%
Total industry	**682 016**	**100,0%**	**717 673**	**100,0%**
Mining industry	252 671	37,0%	300 338	41,8%
Food industry	56 421	8,3%	58 685	8,2%
Chemical industry	208 839	30,6%	158 876	22,1%
Other non-metal mining industry	62 108	9,1%	59 605	8,3%
Metallurgy	44 515	6,5%	75 266	10,5%
Other	57 462	8,4%	64 903	9,0%

Production process in industrial companies constitutes about 83.5% of the consumed electricity, and the remaining 16.5% is due to lighting, heat supply and other purposes (Table 2).

Table 2. Electricity consumption structure by consumption purposes

	Production	Lighting	Heat supply	other	***Total***
Total Industry	**83,5%**	**10,0%**	**5,2%**	**1,2%**	**100,0%**
Mining industry	88,5%	7,0%	3,4%	1,1%	**100,0%**
Food industry	84,3%	10,9%	4,1%	0,6%	**100,0%**
Chemical industry	76,8%	10,8%	11,0%	1,4%	**100,0%**
Other non-metal mining industry	84,0%	10,3%	4,7%	1,0%	**100,0%**
Metallurgy	79,5%	12,3%	6,9%	1,3%	**100,0%**
Other	76,1%	13,2%	8,2%	2,6%	**100,0%**

Calculations of growth projections of energy-intensive branches and electricity consumption structure illustrate that electricity consumption in industry may grow by 9-10% annually. However, in the scope of this project a more conservative scenario for electricity consumption by industrial companies is adopted – with about 4% growth rate. It is stipulated by both introduction of energy saving technologies and using other types of energy carriers (i.e. gas) instead of electric power.

Budgetary organizations

Electricity consumption by budgetary organizations was comparably stable in recent years and fluctuated within 229-235 mln KWt H limits. Electricity consumption estimates that are outlined in 2003-2005 mid-term expenditures program are put in the basis of projections of electricity consumption by budgetary organizations.

Other consumers

Among "other consumers" are service sector companies. Electricity consumption projections of the latter are estimated becoming from the expected growth of the sector. "Other consumers' " consumption is estimated to grow by 5% annually.

Transport, irrigation ,water supply and sewerage companies Projections on electricity consumption by these companies are presented in the corresponding part of the report.

The projection of energy production for 2002-2007

1. According to projection of generating stations, production volumes of electricity in 2007 will be equal to that of 2001. Besides, energy production will decrease in 2003-2004 and only in 2005 there will be tendency of growth. Such projections for electricity generation depends on decrease of technological and excess losses of high voltage distributional nets, as well as reduction of demand for electricity of such consumers as irrigation and water sectors.

   Meantime significant changes are projected in the structure of energy production, particularly the share of production by A NPP and HPPs will increase and the share of energy production by TPP will reduce (energy produced by A NPP in 2006 will increase by 6.3 % compared to 2001, reaching from 33.9% to 40.2%in the total , as well as HPPs share will grow by 5.8 %, reaching to 23.7% from 17.95% for TPPs their generation will decrease by 12.1 %, reducing from 48.2% to 36.1%).

   - The net electricity production by Arm NPP is expected to reach 2300 mln KwT/h in 2003. The projections are based on the following assumptions: the operation of the reactor at 92% thermal capacity, and it is out of operation 55 days in a year. The net electricity production volume produced by A NPP is estimated to be 2156 mln Kwt/h, starting 2004 in case Vorotan-Arpa tunnel is put into operation.
   - Yerevan TPP net energy production is conditioned by heating of the part of Erebuni and Shengavit communities.Net energy production for 2003-2007 is projected at 348 mln Kwt/h a year on the assumption of incessant work regime of thermal-turbine .
   - Net energy production by Sevan-Hrazdan Cascade is projected to be 353 mln kwt/h on the assumption that additional 150 MCM of water from lake Sevan will be used for irrigation. Net production is projected at 497 mln Kwt/h, due to possibility of Vorotan-Arpa tunnel operation.
   - The net energy production volume produced by Vorotan HPP for 2002 is projected to be 1161 mln kwt/h which is based on electricity generation in the first 6 months of the current year. In 2003 net energy production volume is projected to be 896 mln Kwt/h. The net energy production by Vorotan HPP for 2004-2007 is estimated at 623 mln kwt/h due to possibility of Vorotan-Arpa tunnel operation.
   - The energy production for DZora-HPP and small HPPs was estimated based on the actual energy produced in recent years. The projection of 3% of the energy production growth for small HPPs is conditioned by constructing possibilities of small HPPs.
   - Generation by Hrazdan TPP is calculated as a residual, balancing the demand and supply of electricity that is why its energy production depends on the demand for electricity.

2. The forecast of the incomes in energy system for 2002-2007

- *Energy consumption in internal market:* Having privatized the Armenian electric CJS, the energy consumptions in the internal market are projected becoming from the difference between the energy end consumption of the average tariff and defined tariff margin for Armenian energy network (in 2003 for1kwt hour -0.015US$ let alone VAD, for the next years 0.0159US$ for 1kwt hour let alone VAD). The forecast for the volume of the energy supplied for the Armenian energy networks is based on the forecasts of the energy consumption.
- Energy Export: The income from the energy export is predicted becoming from the energy tariff exported to Georgia (0.0254 USD for 1 kwt/h) and from the energy volume exported to Georgia. The forecast for energy volume exported to Georgia is realized becoming from the dynamics of the recent years. It is expected that in 2007 the volumes of energy export to Georgia will increase, amounting to 340 mln kwt/h.

The forecast of the expenditures of energy system in 2002-2007

3. Fuel expenditures of energy system

- *Natural gas:* The projections of the natural gas consumption by Hrazdan and Yerevan HPP are based on the energetic production forecast and fuel share expenditures.
- The fuel specific expenditures are predicted according to dynamics of the recent years, as well as on the operation possibilities of more optimal regimes for fuel expenditures. The share for Hrazdan is established 370-375gram conventional fuel, for Yerevan - 375g.conv.fuel
- The price for natural gas ,including VAD, is established 79.1$/1000m3.
- *Nuclear Fuel:* The expenditures for nuclear fuel ,used by ANPP for the energy production have been planned according to the defined 0.0054 US$ from share for 1kw hour and according to the HPP predictions of energy production .

4. Non fuel expenditures of energetic system

- *Salary and social insurance payments*: The expenditures concerning the social payments and energetic system staff payments will increase by 12% in 2006 compared to that of 2002(Armenian electric networks excluded),reaching from 7.753mld drams to 8.685*bln* At the same time, it is projected to optimize the number of employees in the energy system from 5679 to 5136 at that period. As a result of this, the average salary in energy system will increase by 36%.

- *Repair, row material and other expenditures:* The expenditures for repair, row materials and other materials will increase by 14% in 2006 compared to that of 2002 (Armenian electric sets excluded), reaching from1.695 bln drams to 8685 bln drams .This growth is conditioned by inflation factor. The expenditures for repair, raw material and other materials are projected based on necessary minimal requirements for providing the exploitation of the energy system organizations.

5. Taxes

- The responsibilities of energy system organizations for VAT are calculated by a crew method.
- The forecast for responsibilities for income tax is realized by following the same method and is calculated according to separate organizations of the structure.
- The responsibilities for other taxes (land tax, property tax and other) is established 590mln dram.

Irrigation

In general, the principle aim of projections is to make a project corresponding to realistic policy and technical state of the company in the framework of financial rehabilitation project of the Water sector companies.

The main assumptions that were put into the basis of projections for irrigation sector include the following statements:

1. According to macroeconomic indicators' projections for 2003-07 the real growth rate in agriculture will be equal to 2.5-3% annually. The projections for demand for irrigation water assumes that the abovementioned real growth will be supported by 1.5-2% annual growth of irrigated land area.
2. Lands irrigated by gravity flow are projected to expand by 2%, the lands irrigated by mechanical systems – by 1% annually, without consideration of the impact of the shift from mechanical to gravity flow. Impacts of such measures are considered in estimates from 2004:
   - Putting into operation Vorotan-Sevan tunnel in 2004 provide with additional 100 mln CM gravity flow water supply, which will be sufficient for irrigation of 20 thous. Ha lands (in average) . Moreover, resultant from the shift of Ajgedzor and Airum systems from mechanical to gravity flow it will be possible to save about 10 mln KWt H energy, which corresponds to 10/0.55=18mln CM gravity flow water sufficient for irrigation of 18/5.1 =3.6 thous. Ha lands.
   - In 2006 will be completed shift of Yeghegnadzor system from mechanical to gravity flow, and this will save additional 37 mln kWt H electricity, and 37/0.54=69 mln CM water will be supplied by gravity flow. It will be sufficient to irrigate 6.9/5.2=13 thous. Ha lands.
3. In correspondence with land area increase, estimates of demand for irrigation water are based on the average water volumes supplied per 1 ha in 1999-2001, which has amounted to

5 thous. CM annually (taking into account rainfall, water supplied in 2002 is estimated 4.5 thous CM).

4. The following measures are taken into account:
   - Implementation of works in the framework of the "Development of irrigation systems" project at the expense of WB credits and other means aimed at shifting irrigation from mechanical to gravity flow in the 3 most energy intensive systems. This will save 39 mln kWtH electricity. The first two systems – Airum and Ajgedzor, will shift to gravity flow in 2004, thus saving 2 mln kWt H, and Yeghegnadzor – in 2006, which will save additional 37 kWt H electricity annually.
   - Rehabilitation and reconstruction of the main and secondary canals, which will result in reduction of water filtration losses by 52.8 mln CM.
   - According to the above mentioned project of the Government of RA additional water intake, in case of rehabilitation of the main structure on the Araks river, will amount to 106.26 mln CM. Besides that, starting from 2002-2003 the lands irrigated by the 3 pumps on the Metsamor river will be irrigated by gravity flow thus saving 6.36 mln kWt H electricity annually. Nevertheless, since in all probability this project will not be implemented within the next few years, its impact is not taken into account in the framework of Integrated Financial Rehabilitation Program.

   As a result of all the mentioned measures losses in the system will reduce to 28% in 2007[8], and annual electricity expenses will amount to 240 mln kWt H including electricity electricity consumption by former community wells of 35 mln kWt.h.

5. It was taken into account that former community pumps were transferred to the Irrigation CJSC. About 15.1 thous. ha area is being irrigated by those pumps. Water intake amounts to 100-120 mln CM, and electricity consumed for these purposes was estimated based on the average electricity expenditure at 0.31 kWt H per 1CM and 112*0.31=35 mln kWt H annually. It is assumed that electricity expenditure is equal to 30 mln kWt H in 2002.
6. Electricity tariff is assumed (excluding community wells) 17.6 AMD. Electricity tariff for community wells is assumed to be 25 AMD in 2002, and starting from 2003 electricity expenditures are estimated considering the irrigation system average tariff, with an assumption that the next year double-tariff meters will be installed at all former community pumps (21.67 AMD =(25AMD*16H+15AMD88H)/24H). Thus the average tariff will equal to 18.1 AMD.
7. The scenarios of tariff increase assumes that irrigation tariffs will be raised up to 5.2 AMD in 2004, and then they will rise by 1 AMD every year and will reach 8.7 AMD in 2007.
8. It was taken into account that Martuni, Yeghegnadzor, Vayk and Talin water supply branches were transferred from Arm WWC to the Irrigation CJSCs. This transfer is reflected by reciprocal transfers of revenues and incomes at both Arm WWC and Irrigation CJSCs. The additional revenue and the actual income from water supply (Arm WWC payments' collections from residential consumers) are presented separately in income statements and cash flow projections of the irrigation sector. There were no cost switches in

[8] Loss reduction scenario coincides with the loss reduction scenario approved by N440, 2001 Government resolution

the framework of this program, because in some regions such a combination of drinking and irrigation water supply services assumes certain optimization of management expenditures.

9. There are 12751 drinking water consumers in the regions transferred to the Irrigation CJSCs, the increase rate and water consumption of which are estimated according to the average norm of the other ArmWWC consumers (see explanation for ArmWWC). As a result, the revenue of Irrigation CJSCs from water supply is estimated equal to 116 mln AMD in 2002-2003, and afterwards it is estimated according to the population growth: 134 mln AMD in 2004, and 131, 120 and 114 mln AMD – in 2005-2007 correspondingly (after installation of meters, water consumption volumes will be further updated, and due to reduction of the per capita water consumption norms the revenue will gradually reduce). At the same time, the revenue of Irrigation CJSCs from the regions transferred to Arm WWC is reduced by 25 mln AMD in 2002.
10. Operation and maintenance expenditures (except for salaries and social insurance payments) are mainly based on expenditures' estimates which are presented in the program approved by N440, 2001 Government resolution.
11. Former community wells operation and maintenance expenditures (including salaries) are assumed 320 mln AMD.
12. For the current stage, salaries are estimated within the limits fixed by the mentioned resolution and with one year delay, since no tariff increase has taken place before, and besides, after completing analyses on the level of the companies it would be possible to make more substantiated estimates on salary expenditures and to optimize the former community wells expenditures.
13. Capital expenditures' scenario was drawn from the combination of estimates of the following projects:
    - Irrigation systems reconstruction project of the World Bank;
    - Dam Safety project of the World Bank;
    - Co-financing of the Government of RA with the above mentioned two projects;
    - Other capital expenditures financed by the Government of RA, particularly renovation of water-pools.
14. Taxes are estimated on cash basis until 2006 inclusive.
15. The suggestions concerning the receivable and payable liabilities made up to 2002 are developed in a way not to influence on the current activity of the company.
16. The management fees for private operators are projected 50 mln AMD in 2003, and gradually grow to 300 mln AMD starting 2005.

Drinking water sector

Yerevan WCC

1. *Drinking water consumption estimates* Number of residential consumers was assumed to be 265 thous in 2002, while as a consumer is considered a 3.5 members family. Consumers number increase in 2003-2007 is estimated becoming from the expected population annual growth rate at 0.2-0.3%. Water consumption by residential consumers' in 2002-03 is estimated considering the per capita water consumption norm at 250 L. From 2004 this indicator is smoothly reduced up to 190-200 L since installation of water meters will significantly reduce water consumption[9]. Water consumption in 2006-07 was estimated becoming from the per capita water consumption at 180 L.
2. Water consumption by budgetary organizations and other consumers is estimated based on the actual consumption of 2001 and forecast consumption of 2002, since in the previous two years significant efforts have been made trying to improve metering system, and therefore, 2001-02 indicators are close to the "actual" consumption volumes. Water consumption by other consumers (ArmWW is included) is estimated 20 mln CM annually, among of which – 8 mln CM from ArmWW.
3. Collection level in 2003-05 is estimated under the program approved by N690, 23 May, 2002 resolution of the Government of RA, and for the coming two years the collection is expected to rise by 2% and reach 90.
4. Payment collection from budgetary organizations and legal entities is assumed to amount to 100% from 2002, taking into account that water meters are already installed or will be installed before the end of the year.
5. Moreover, it is taken into account that water is supplied to ArmWWC and non-urban consumers (about 20-23 mln CM annually) initially at 30 AMD tariff. Starting from the second half of 2004, it is raised to 43, then 56 AMD. These estimated tariffs certainly require reconsideration.
6. *Losses:* Before introduction of comprehensive accounting system in drinking water sector, loss indicator is practically considered net accounting indicator. Accounting cost for 2003-2007 exceeding the indicators approved by N690 resolution of the Government of RA, they are considered 4% taking into account actual facts of the first 9 months in 2002. After capital investments losses will reduce from the present 70% to 45% in 2007. This assumes that water supply duration will not extend significantly, since in this case loss reduction scenario will not be implemented.
7. Supposedly, loss indicators. Nevertheless, to avoid from incorrect estimations, electricity consumption is estimated becoming from current pump power and work regimes, as well as estimated amount, taking out energy saving results from the amount. Besides, projections for 2005-207 are estimated possible electricity savings resultant from over-norm consuming decrease and loss reduction in intra-building systems due to introduction of accounting system.
8. Electricity consumption is estimated becoming from the projects designed for shifting from mechanical to gravity flow systems, and are included into N690-A, 23 May, 2002 resolution. Besides, some other projects have been included, that will bring about additional electricity saving:

[9] The actual consumption level will be updated

- The savings of Araratyan first and second pumps in 2003 will be 2.6 mln kwt/h, then 5.2 mln kwt/h as a result of the demand regulation and elimination of losses of non-urban consumers.
- Additional 1.6 mln kwt/h energy savings through waterlines changes by Araratyan 3rd pump station (in coming years-5.3 mln kwt/h).
- 2 mln kwt/h, then 5.3 mln kwt/h expected savings as a result of more efficient pump installation in Aparan and Katnaghbyur wells.

As a result, the annual electricity expenditure will be 188 mln kwt/h in 2003. In coming years energy expenditure will decrease because of activity implementation for additional energy savings, as well as in accordance with dynamics of loss indicator.

9. As a matter of fact, electricity indicator on 1 CM water in 2003 will rise from 0.52-0.55 of 2000-2001 making up 0.6 kwt/h CM. The main reason is that in the case of extension of water supply duration the loss will not reduce from current state, later it will reduce because of consumption losses and unjustified consuming decrease.
10. Operation and maintenance expenditure coincide with the expenditures included in above mentioned project, excluding the amount for community services and management fee.
    - The community service payments and management fees for 2002 are estimated 50 mln AMD, for the next year -150mln AMD, later it increases up to 400mln AMD for 2006-07. Besides , trust management involves judicial manager , who will have appropriate qualification , practice, experience and capacity for governing water supply sector. (The more detailed description is in the option of institutional reforms).
    - At the same time, the management fee of ,,A. A. Utility,, increased up to 70mln AMD (because of AMD devaluation) compared to the amount notified in the above-mentioned Government resolution.
    - The expenditures for the raw material, other material and fuel are projected between 450 mln and 600 mln AMD
    - The natural resource fees are projected becoming from water intake 0.05 AMD per 1 CM.
    - Other economic and operation expenditures in 2003 will increase from 600 mln AMD to 820 mln AMD in 2007.
11. Salary and social insurance payments coincide to the amount of the project adopted by Government.
12. Depreciation: After summarizing the inventory results, it is necessary to use the fixed assets of amortization on tax account purposes. However, Amortization aimed at financing in the framework of this project are estimated becoming from possible tariff rise (2004).
13. Interest payment accounts include annual 0.75 % amount for on-lending (as capital investments) implemented in the framework of WB Community Development Program.
14. Taxes
    - VAT and income taxes are estimated becoming from the fact that before 2006 water companies estimate these taxes for residential consumers on cash basis assuming that about 80% of consumers are residents.

- Land tax is not included into other taxes accounts, since according to the 1st article of the Law of RA on "Making amendments in the Civil Code of RA"[10] "in corresponding lands, regardless of subject of property ownership, a free, compulsory and permanent servitude is defined for operation and maintenance of public highway-engineering infrastructures (electricity transmission and communication lines, gas pipe-lines, water supply and removal, heat supply systems), overhead and under-ground cable lines and pipe-lines, supports and other premises constructed for their safe operation ".
- Property tax should be estimated based on the book value of buildings, premises and transportation means. Taking into account that water pipes and water mains are the overwhelming part of the water supply companies, which do not have property tax, re-assessments show that this tax will not constitute any significant amount.
- Natural resource fee is not included in the accounts, since it is developed draft law, according to this law Water Supply companies are free from payments.

15. Capital investments' estimates represent integration of investments financed from the World Bank in the framework of the Community development project and the Government co-financing amounts (represented in N690-A Government resolution dated 23 May, 2002).
16. The suggestions concerning the receivable and payable liabilities made up to 2002 are developed in a way not to influence on the current activity of the company. They are represented in more details in the corresponding sector.
17. Projections assume that water supply tariff will be raised to 72 AMD for water supply from July 2002 only. The annual average tariff will be 59 AMD, and for the next years-72 AMD. At the same time the tariff will rise to 56 AMD for non-urban and wholesale consumers (43 AMD for 2004).

As a result, YWW CJSC will have 1935 mln AMD financial gap in 2003, and it is necessary to have the same subsidies in the State budget to cover this gap.

Arm WWC

1. *Drinking water consumption estimates* Number of residential consumers was assumed at 295 thous in 2002, while as a consumer is considered a 3.1 members family[11]. 12751 consumers in the regions transferred to Irrigation CJSCs in 2002 are not included there (see the section on the Irrigation sector). Consumers' number growth was projected becoming from population annual growth at 0.2-0.3%.
2. The impacts of the program on community water supply implemented by the German Development credit bank (KfW) in Armavir marz and of the projected programs in Lori and Shirak marzes, are presented separately, since institutionally they will be taken off the ArmWWC structure. However, they are included into the total accounts, since for getting a precise picture and a comprehensive policy it is necessary to consider the whole sector, but not Arm WWC separately. Particularly:

[10] Adopted by the National Assembly of RA on 26 June, 2002
[11] According to the information submitted by the ArmWWC number of residents in these regions is 915533, and number of consumers – 295235.

- As a result of implementation of the project in Armavir about 80% of consumers – 12.5 thous. abonents will be taken off the ArmWWC structure in coming 3 years. It is estimated that they will be taken off starting from 2003 during 3 years evenly.
- According to the primary estimates of the Lori project consumers of the city Vanadzor and some nearby villages will be taken off. Taking into account that the feasibility studies are under wait, and number of involved consumers are not estimated, in the present financial rehabilitation program the whole number of the present consumers of the Vanadzor branch[12] are included. It is estimated that during three years 29.5 thous consumers will be taken off ArmWWC service from 2005 by 1/3 annually.
- The same approach was used in case of the Shirak project. It is assumed that the present Shirak branch with Gyumri city with nearby villages will be taken off the ArmWWC structure. It is estimated that during three years 64.2 thous consumers will be taken off ArmWWC service from 2005 by 1/3 annually.

From 2003 the number of consumers remaining under ArmWWC service is presented separately taking into account the number of taken off consumers. However, with regard to tariff and subsidizing policies it is necessary to consider the financial results of operation of Lori and Shirak marzes' water supply units for 2005-2007.

3. Drinking water consumption was estimated becoming from the fact that presently about 5.5% of consumers use outside taps (which corresponds to the specific weight of outside taps in the framework of actual records of 2002). In this case, consumption norm is estimated equal to 50L per day. However, resultant from estimation of consumer list, ArmWW mentions that 16% of consumers use outside taps, and this issue needs to be reconsidered with communities.

For remaining consumers the norm is 200 L per day. As a result the average consumption nor for ArmWWC consumers is 192 L per day. Thus, annual water consumption by a 3.1 member family will amount 213.9 CM.

4. Projections were made on the assumption that with installation of meters water consumption will reduce[13]. However, taking into account that in case of ArmWWC meters installation will start some years later and will take longer time, water consumption per family in 2003 was assumed the same as for 2001-2002. Water consumption in 2007 was estimated becoming from 180 L per capita water consumption norm (170 L per family). From 2005-2006 this indicator is smoothly reduced up to 180 L in 2007. At the same time, it is assumed that at that time consumers presently using outside taps will have centralized water supply.
5. Water consumption by budgetary organizations and other consumers is estimated based on the actual consumption of 2001 and forecast consumption of 2002, since in the previous two years significant efforts have been made trying to improve metering system, and therefore, 2001-02 indicators are close to the "actual" consumption volumes. However, there is a necessity to update limits and norms of water consumption prices in the present budget planning of budgetary organizations.

[12] The primary estimates of Lori and Shirak projects will be ready in February, 2003.
[13] Consumption actual volumes will be further updated.

6. Collection level in 2003-05 is estimated under the program approved by N440, 17 May, 2001 resolution of the Government of RA. Projections are estimated according to separate groups. Particularly, it was assumed that from 2003 payment collection level from budgetary and legal entities will amount 100%, collection from residential consumers will increase from 47% in 2002 to 88% in 2007. As a result, in 2007 the total collection will equal to 90%, which is the max accepted level.
7. Before acquiring a comprehensive metering system, the loss indicator, in fact is a estimative one. Presumably, the loss indicator will affect electricity annual expenditures. However, for avoiding erroneous estimates electricity consumption was estimated becoming from the pumps' capacity and operating mode, and then pilot estimates on energy saving measures were taken off that amount. The loss indicator, as a indicative indicator, was assumed as was presented in program approved by N 440 resolution dated 17 May, 2001 (see the section on capital investments). It should be mentioned that estimates on loss dynamics need to be updated through technical audit approach, taking into account the incomplete capital renovation works, as well as expected improvement results.
8. Becoming from the present actual expenditures of pump stations in 2003 electricity consumption was projected at 67 mln kWt H. For the next years it was assumed that it would be possible to shift to gravity flow and, through pumps repair and efficiency increase, to decrease electricity consumption up to 52 mln kWt H in 2007.
9. Operating and maintenance costs were estimated according to the following components:
    - In 2003 200 mln AMD for raw materials, materials and fuel, then the amount was increased annually in accordance with consumer price index growth rate.
    - Natural fee was estimated becoming from water intake – 0.05 AMD per 1CM.
    - Amount for purchased water was estimated at 335 AMD, of which: 240 AMD – for Yerevan WWC (annually 8 mln CM by 30 AMD), 60 mln AMD - for "Northern University" CJSC, 30 mln AMD - for ANPP and 5mln AMD – for Mantash water basin.
    - From 2004 payment for water purchased from Yerevan WWC was reassessed at a higher wholesale tariff – 45 AMD
    - Payments to Yerevan WWC for water removal and sewerage were estimated at 48 mln AMD (4.8 mln CM*10 AMD).
    - Other economic and operating costs in 2003 are estimated at 470 mln AMD, and afterward, in 2005-2007 Vanadzor and Shirak branches are presented separately. Then these cost will smoothly increase up to 510 AMD in 2007.
    - Trustee management fees for 2003 were estimated at 100 mln AMD, and then it is projected that management fees will reach up to 300 mln AMD in the next two years, and will remain unchanged in future. Trustee management assumes involvement of a legal entity, which have an adequate qualification, possess necessary equipment, expertise and ability to manage a water supply system (the approaches are presented in more detail in the part on institutional reforms).
    - Salary and social insurance payments were estimated according to the ArmWWC staff list. Afterward, about 100 mln AMD salary fund increase is projected annually.

10. Depreciation: After summarizing the inventory results, it is necessary to use the fixed assets of amortization on tax account purposes. However, Amortization aimed at financing in the framework of this project is estimated becoming from possible tariff rise (2004). Amortization aimed at financing for coming years is to be estimated based on project of investment policy, total investment amount, their priority and finance state.

11. Interest payment accounts are estimated as in YWW. Annual 0.75 % amount - for on-lending (as capital investments) implemented by the means of WB lending program.

12. Taxes and natural resource fee

- VAT and income taxes are estimated becoming from the fact that before 2006 water companies estimate these taxes for residential consumers on cash basis assuming that about 75% of consumers are residents. Accounts for 2007 is estimated by accrual method having impact on debits.
- Land tax is not included into other taxes accounts, since according to the 1st article of the Law of RA on "Making amendments in the Civil Code of RA"[14] "in corresponding lands, regardless of subject of property ownership, a free, compulsory and permanent servitude is defined for operation and maintenance of public highway-engineering infrastructures (electricity transmission and communication lines, gas pipe-lines, water supply and removal, heat supply systems), overhead and under-ground cable lines and pipe-lines, supports and other premises constructed for their safe operation ".
- Property tax should be estimated based on the book value of buildings, premises and transportation means. According to the preliminary assessment of revaluation results, the property tax will not constitute a significant amount.
- Natural resource fee is not included in the accounts, since it is developed draft law, according to this law Water Supply companies are free from payments.

13. Capital investments' estimates represent integration of investments financed from the World Bank in the framework of the Water supply development project and the Government co-financing amounts, as well as capital expenditures financed by Government of RA (represented in N440 Government resolution dated 17 May 2001).

The suggestions concerning the receivable and payable liabilities made up to 2002 are developed in a way not to influence on the current activity of the company.

14. The tariff scenario is assumed as follows: starting from July of 2004 the average tariff will be raised to 62 AMD for water supply only. The annual average tariff will be 52 AMD, and for the next years-62 AMD. This is the average tariff, while it is necessary to use diversified tariff system for different regions.

    As a result, ArmWW will have 810 mln AMD financial gap in 2003, and it is necessary to have the same subsidies in the State budget to cover this gap.

[14] Adopted by the National Assembly of RA on 26 June, 2002

Urban Electric Transport of Yerevan

Yerevan Subway

1. Projections suggest to increase subway ticket price from 40 AMD to 50 AMD from January 2003.
2. At the same time, projections assume that passenger flow will decrease by 0.3 mln passengers per year taking into account previous 2-3 years tendency, which is based on recorded indicators in 2000-02.
3. It is assumed that the Subway will receive full compensation for passengers with privileges or the Government will decide the issue of privileges.
4. Revenues from leasing are estimated becoming from 1000 sq/m leasing land in 2003 change to 1400 sq/m in 2007. The average price is estimated 400 AMD daily, and 144000 AMD annually. As a result gross revenue from leasing will increase from 150 mln. AMD in 2003 to 210 mln. AMD in 2007.
5. Revenues from advertisements are estimated by two parts.
    - Number of advertisement sheets posted in wagons will grow up from 7 to 11 in 2007 due to passenger flow increase. At the same time, the revenue from one advertisement sheet is estimated at USD 70 equivalent.
    - Total size of advertisement signs in the stations will grow up from 80 sq/m to 400 sq/m in 2007. The price of 1 sq/m is estimated 30 USD equivalent.

    As a result the gross revenue from advertising will be estimated 35 mln AMD in 2003, and it will grow up to 100 mln AMD in 2007.
6. Other revenues (audio ads, sales of tickets), as well as revenue from administrative territories are not included, which will balance baseline over-estimations for revenues from leasing and advertisement activity.
7. Projections are assumed that electricity expenditure will remain 18 mln. kwt/h annually. Tariff is assumed at 18.6 AMD/kwt/h.
8. Salary fund will increase in coming three years, and average salary of 39000 AMD per month will amount to 67000 AMD in 2006.
9. It is assumed that operation and maintenance expenditures will not undergo essential changes. (210 mln AMD)
10. Depreciations estimations kept the previous-year-level.
11. Capital expenditures assumed at 100 mln AMD for 2002, then the amount grows accordance to inflation.

As a result, Yerevan Subway will have 528 mln AMD gap, which is to be financed at the expense of State budget subsidies.

Yerevan Electric Transport CJSC

Projection for Electric Transport CJSC includes:

1. Passenger flow is projected due to improvement of service quality and reliability enhance toward electric transport resulting from basic renovation, absence of which in 2000 and 2001 is one of the main reason for passenger flow decrease. The number of passengers in projections for 2003 is assumed at 13 mln compared to 12 mln in 2002, and then increasing by 1 mln per year, it will amount to 16 mln in 2006.
2. It is assumed that Yerevan Electrotransport will receive total revenue from passenger flow, that is the full compensation will be received for passengers with privileges, or Government will decide the issue of privileges.
3. Projections on current expenditures are assumed that work staff will reduce from 790 to 512 resultant from unification of electro-transport-parks, and along with salary fund increase by 2007 average salary will increase two times.
4. Current 29 sub-station decrease will allow reducing the staff and saving electricity.
5. Supplied electricity has been accounted in separate routs and ??? . The electricity cost by 2005 can be reached to normative indicators in the expense of vehicle and wires renovation (2.3 kwt/h per km for tram, 2.1 kwt/h for trolleybus). These indicators ???, as a result electricity expenditure in 2003 will reduce from 9.7 mln kwt/h to 8.7 mln kwt/h in 2007. These indicators need to be add to electricity used in administrative buildings and for renovation (0.5 mln kwt/h annually).
6. Operating and maintenance expenditures are estimated annually 50 mln AMD during the whole program.
7. Total amount of capital expenditure is estimated approximately 160 mln AMD for 2003, 90 mln AMD of which is meant for renovation of infrastructure sector. These estimated capital expenditures are assumed for renovation of electro-transport parks and infrastructure sectors in 5 years, while vehicle renovation is not included.

As a result, electro-transport sector will have 154 mln AMD financial gap in 2003, which will reduce year by year coming to 80 mln AMD in 2007. It will be necessary to finance at the expense of State budget subsidies. Also the compensation amount for passengers with privileges need to be included, which will account annually 160 mln AMD.

Yerevan Subway

1. Tariff is assumed at 50AMD.
2. The passenger flow will reduce each year by 0.3 mln.
3. The Subway will receive full compensation for passengers with privileges.
4. Revenues from leasing are estimated at 150-210 mln AMD.
5. Advertising revenues – 35-100 mln AMD.
6. Other revenues (audio ads, sales of tickets) are not included.
7. Electricity consumption is assumed 18 mln kWt.h per year.
8. The average salaries will increase from current 39000AMD to 67000 AMD.
9. The O&M costs are projected to remain relatively stable – 210 mln AMD.
10. Depreciation is assumed at the same level with previous years.
11. Capital expenditure are assumed 100 mln MAD annually.

Yerevan Electrotransport CJSC

1. The passenger flow is projected to grow due to improvement of service quality by 1 mln annually.
2. The full compensation for passengers with privileges will be received from the budget.
3. Merger of the 4 depots into 1 will result in staff downsizing from 790 to 512 and increasing the average salary.
4. Electricity consumption is calculated on the basis of normative consumption 2.3 kWt.h per 1km for trams, and 2.1 kWt.h per 1km for trolleybuses.
5. Other revenues (audio ads, sales of tickets) are not included.
6. The O&M costs are projected to remain relatively stable – 50 mln AMD.
7. Depreciation is assumed at the same level with previous years.
8. Capital expenditures are assumed 160 mln AMD annually – including 90 mln AMD for infrastructure renovation.

Explanation of Debt Restructuring Measures

Power Sector

As it was mentioned before, during the last 3-4 years the energy sector has operated with significant financial gap, which was mainly financed through accumulation of payables.

As a result payables of energy sector (without bank loans) totaled to about 88.259 billion AMD as of September 1st 2002, and bank loans (on the 1st of July 2002) - 38.124 mln USD.

Structure of Energy system payables

	01.10.2002
Fuel costs	21 745
Gas	7 418
Natural gas	18
Gas import (current)	7 400
ITERA	1 019
ArmRusgas	6 381
Nuclear fuel*	14 327
Non-fuel costs	11 001
Salaries and social insurance payments	8 296
Salary	4 680
Social insurance payments, o/w	3 616
Fines, penalties	740
Suppliers and contractors	2 705
Liabilities to privatized HPPs	570
Liabilities to the budget o/w	37 492
fines, penalty	20 094
Budget loans	16 787
ArmNPP	7 962
Hrazdan TPP	1 905
Yerevan TPP	1 300
Armenergo	1 452
Yerevan Electricity Distribution Co	250
Northern Electricity Net	17
Southern Electricity Net	25
ArmGaz	1 367
ArmTurtrade	2 206
Interests of budget loan	303
Prepayments for electricity and natural gaz	664
TOTAL	88 259

Accumulated payables preclude the normal operation of the system, create obstacles for rehabilitation of morally and physically obsolete fixed assets and don't allow operating the system by commercial principles.

During the next years the main precondition for the normal activity of energy is the financial rehabilitation of the sector through releasing the system from huge liabilities. Cash flow projections for the coming 5 years under current tariffs show that it is not realistic to pay off the debts at the expense of profit of the system.

That is why in the framework of this project the main sources of the system payables clearance are viewed:

- Restructuring of the bank loans, either through re-financing of old loans or structuring of current operating loans
- Mutual cancellation of receivables and payables
- Restructuring of the payables
- Receipts from privatization in power sector
- Privatization of the assets that are not related to the financial activity of the system
- Tied financing of the sector
- Profits

Below are summarized suggestion for clearance and restructuring of payables and bank loans of the energy sector:

1. Cancellation tax liabilities of the energy sector and social insurance fund to the cancellation for the budget organizations and quasi-fiscal (irrigation, drinking water, transport), which are virtually equal (tax liabilities of the energy system and areas on social insurance payments are 41.108 billion AMD, and liabilities of the budget organizations and quasi-fiscal are 40 893 billion AMD). Repayments of the liabilities of quasi-fiscal can be implemented by making tied financing from state budget to the quasi-fiscal companies (in the form of budget grant or loan) for energy liabilities clearance, then the later cancel the liabilities towards energy sector, while energy sector companies repay their liabilities towards the budget and social insurance fund.
2. To reorganize or to repay budget loans of the system (this is about 16.787 billion AMD), making tied financing to the system companies in the form of budget grant.
3. The intention of the Government, which implies to cancel the liabilities of the system towards the nuclear flue and also the new liability towards the nuclear flue which is imported for ArmNPP in 2002 (6.7 mln USD) at the expense of 50% revenue coming from electricity exportation, is preferable. This liability cancellation of 38.7 mln USD is assumed to be implemented during 5 years. As a result, the gap of the system needs to be filled at the expense of budget tied financing, which estimated 5.92 mln USD a year.
4. The loan of 10 mln USD made from Interstate Bank to ANPP and the loan of 5 mln USD extended by Armimpexbank to ArmGaz, should be restructured until 2007 at least. These two loans can be viewed as supplementary source of working capital.
5. Clearance of the rest of the payables (on gaz, salary, to suppliers and contractors, prepayments of electricity and natural gaz, and electricity supplied from HPP), which are 16.037 bln AMD and liabilities of bank loans (23.124 mln USD-13.3 bln AMD) should be implemented at the expense of receipts expected from privatization (37 mln USD from privatization of ArmElNet, 6.1 mln USD from privatization of Cement Factory) and about 4.6 bln AMD at the expense of financing from the State budget.

The suggested mechanism for the clearance and reconstruction of the energy system payables, as well as the financing sources are summarized in the following table:

	Liabiities *Mln AMD*	Financing Sources, mln AMD					
		Bilateral cancel-lation	Uni-lateral cancella-tion	Restruc-turing	Privatization receipts *	Tied financing *	Profit
Tax Liabilities	41 108	41 108					
Budget Loans	16767		16767				
Nuclear flue*	22175**					16960	5215
Bank Loans*	8595			8595			
Other liabilities	29333*				24696	4637	
TOTAL	117978	41108	16767	8595	24696	21597	5215

*) Exchange rate used 573 AMD
**) Liabilities for nuclear flue is 38.7 mln USD.

Water and Electric Transport Sectors

The recommendations on debt restructuring also include the provisions of the recently adopted Law on "Cancellation of arrears on drinking and irrigation water for residential consumers" and outline the debt cancellations resulting from the above mentioned Law, as well as the Government Resolution regarding the cancellations of arrears resulting from the privatization of ArmCement. Furthermore, additional recommendations include additional repayment/cancellations of arrears and long-term debt to be financed through additional government subsidies. All calculations and recommendations are presented for the balances as of January 1st, 2002, which require verification: verification results should be reflected in the total amounts.

The recommendations are given considering only the amount of cancellations, envisaged in the abovementioned Law, for the consumed water before 2000. The arrears accumulated after 2000 are not included in calculations. Arrears on such payables, as current tax liabilities, salaries and social insurance payments are not included, as well, assuming that the companies will be thus motivated to collect their receivables in order to pay the current payables. If only around 30-40% of the amount of receivables remaining after cancellation of pre-2000 arrears is collected, this will be sufficient to cover remaining payables. In case collections of arrears exceed the amount of payables, the extra funds should be distributed to the employees of companies as special bonuses in order to motivate them to collect the arrears on receivables.

As it is mentioned above, the debt cancellation/repayment schemes are presented for arrears as of January 1st, 2002. However, the schemes for Yerevan WWC and Electrotransport CJSC should also include the arrears to be accumulated during 2002, as none of them had adequate sources of financing 2002 gaps. Detailed explanations are given below for each of the public utility sectors.

The main point of recommendations is that all cancellations/repayments, through the chain of inter-indebtedness between the sectors will finally be reflected in either (i) tax arrears of the sectors, or (ii) repayment of budgetary credits to be paid back to the Government, thus, having no impact on the Government Budget. Moreover, the arrears and long-term debts of water sector companies deferred to year 2006 in accordance with Government Resolutions are also included in repayment/cancellation amounts, assuming that the companies will hardly have sufficient resources to repay them by the time they come due.

Irrigation

In accordance to the provisions of the abovementioned Law, 2435 mln out of total 5.8 bln AMD receivables of the irrigation sector will be cancelled. We recommend canceling arrears on payables in the same amount, including:

1. The budgetary credit of 1.3 bln AMD netted out with the amount of tax refund of 183 mln AMD accrued to the Irrigation companies, since the budgetary credit earns interests (the net amount is 1139 mln AMD).
2. At the second place, the deferred electricity bills at the amount of the difference between 2435 mln and 1139 mln AMD (1297 mln AMD).
3. Additional electricity arrears of 154 mln can be cancelled/repaid at the expense of arrears of budgetary organizations to the irrigation companies.
4. The total deferred electricity bills are equal to 2616 mln AMD, and the remaining amount is suggested to repay at the expense of additional subsidies from the government, which will subsequently repaid back to the budget as power sector tax liabilities.

Consequently, the Irrigation sector companies will still have receivables of 3.6 bln AMD. If around 30-35% is collected, that will be sufficient to cover the remaining 1.3 bln AMD of accounts payable. The restructuring operations will have no impact on the current activities of irrigatin companies during 2002-07.

Drinking water sector

Yerevan WWC

The debt repayment/restructuring measures for Yerevan WWC also include estimates of arrears to be accumulated during 2002 – mainly for electricity and environmental charges. These arrears are reflected as additional payments/cancellations of arrears as of January 2002, and appear as "advance" payments for 2002 consumption in the column of balances after restructuring operations.

In accordance to the provisions of the abovementioned Law, 16.8 bln out of total 21 bln AMD receivables from residential consumers of the YWWC will be cancelled. We recommend canceling arrears on payables in the same amount, including:

1. Deferred environmental charges and natural resource fees in the amount of 1.4 bln;
2. Deferred taxes in the amount of 4.6 bln AMD;
3. Electricity arrears of previous years – in the amount remaining after the above two cancellations (10.8 bln AMD)
4. In accordance to the GoA Resolution regarding Arm Cement arrears of residential consumers in amount of 1835 mln AMD are written off (considered as paid), simultaneously considering repaid electricity arrears of YWWC to ArmElNet in the same amount.
5. The same Resolution envisages 229.3 mln AMD to be deemed to be paid for the arrears of the budgetary organizations to the YWWC, with simultaneous cancellation of electricity arrears of YWWC.
6. As a result, the electricity arrears of 12.83 bln AMD will be calncelled, which exceeds the beginning-of-the-year balance by 2.8 bln AMD. The arrears on electricity of YWWC during 2002 are estimated at 3.2 bln AMD. Therefore, additional subsidy of 370 mln AMD is requested to cover the residual balance after cancellations.
7. Extra 250 mln AMD is requested for the penalties on environmental charges: this will also have no impact on the government budget.
8. The ArmWWC arrears on purchase of bulk water of 2.5 bln AMD should offset the budgetary credit of total 9.5 bln to YerWWC, regardless if the operation is executed in cash or in the books of the companies (as cancellations).

9. The remaining 7 bln of the budgetary credit should be repaid from the additional subsidy, considering the fact, that the YWWC will not be able to repay it as it comes due.
10. The restructuring schemes do not include the current on-lending to the YWWC as part of the WB Municipal Development Project, considering that this lending is on concessional terms.

Consequently, the YWWC will still have receivables of 4.2 bln AMD. If around 40% is collected, that will be sufficient to cover the remaining 1.6 bln AMD of accounts payable. The restructuring operations will have no impact on the current activities of the company during 2002-07.

ArmWWC

In accordance to the provisions of the abovementioned Law, 9.5 bln out of total 13.6 bln AMD receivables from residential consumers of the ArmWWC will be cancelled. We recommend canceling arrears on payables in the same amount, including:

1. Arrears to YWWC for the bulk purchase of water in amount of 2.5 bln AMD;
2. Deferred taxes in the amount of 2.6 bln AMD;
3. Electricity arrears of previous years – in the amount remaining 1.5 bln AMD (residual from the 1.8 bln AMD arrears as of beginning-of-the-year and electricity arrears cancellations envisaged by the Ararat Cement Resolution of 300 mln AMD, See also p.4)
4. In accordance to the GoA Resolution regarding Ararat Cement, 300 mln AMD of ArmWWC arrears to ArmElNet are envisaged to be cancelled.
5. The same Resolution also cancels the arrears on budgetary financing for the water supply and wastewater disposal to certain categaories of consumers at 50% of tariffs in the amount of 197.9 mln AMD and arrears of budgetary organizations to ArmWWC in amount of 102.3 mln AMD.
6. The remaining amount should cancel the 2.8 bln of the budgetary credit in the total amount of 3174 mln AMD.

7. The residual balance of the budgetary credit should be repaid through additional subsidies of 350 mln AMD.
8. Extra subsidies are also requested for the payment of penalties on environmental charges, since the previous Government resolution did not envisage these expenditures to be financed from subsidies.

Consequently, the ArmWWC will still have receivables of 4.3 bln AMD. If around 30% is collected, that will be sufficient to cover the remaining 1.4 bln AMD of accounts payable. The restructuring operations will have no impact on the current activities of the company during 2002-07.

Urban Electric Transport

Yerevan Subway

No restructuring schemes are presented for Yerevan Subway since it received subsidies sufficient to cover its financial gaps during the recent years, and no significant arrears are accumulated.

Yerevan ElectroTransport CJSC

The bulk of the accounts payable of Yerevan ElectroTransport CJSC constitute the arrears on electricity – 918 mln AMD. The payment is suggested to finance from:

1. Comepensation for the transportation of passengers with privileges of free-of-charge transportation – 290 mln AMD.
2. Additional subsidy of 630 mln AMD is requested to pay the residual of electricity arrears, which will go back to the Government as tax payments of the electricity sector
3. Around 300 mln arrears will be accumulated during 2002. These arrears are envisaged to be repaid by the free-of-charge passengers' compensation (148 mln AMD) and subsidies of 152 mln AMD.

Consequently, the Company will still have payables of 70 mln AMD, the major part of which are the arrears on salaries and payroll taxes. No additional subsidies are requested for these arrears, as the company seems to be able to clear them through its current activities, through staff downsizing and optimization, as well as revenues from non-principal activities. The restructuring operations will have no impact on the current activities of the company during 2002-07.

Explanation of Debt Restructuring Measures

Power Sector

As it was mentioned before, during the last 3-4 years the energy sector has operated with significant financial gap, which was mainly financed through accumulation of payables.

As a result payables of energy sector (without bank loans) totaled to about 88.259 billion AMD as of September 1st 2002, and bank loans (on the 1st of July 2002) - 38.124 mln USD.

Structure of Energy system payables

	01.10.2002
Fuel costs	21 745
Gas	7 418
Natural gas	18
Gas import (current)	7 400
ITERA	1 019
ArmRusgas	6 381
Nuclear fuel*	14 327
Non-fuel costs	11 001
Salaries and social insurance payments	8 296
Salary	4 680

Social insurance payments, o/w	3 616
Fines, penalties	740
Suppliers and contractors	2 705
Liabilities to privatized HPPs	570
Liabilities to the budget o/w	37 492
fines, penalty	20 094
Budget loans	16 787
ArmNPP	7 962
Hrazdan TPP	1 905
Yerevan TPP	1 300
Armenergo	1 452
Yerevan Electricity Distribution Co	250
Northern Electricity Net	17
Southern Electricity Net	25
ArmGaz	1 367
ArmTurtrade	2 206
Interests of budget loan	303
Prepayments for electricity and natural gaz	664
TOTAL	88 259

Accumulated payables preclude the normal operation of the system, create obstacles for rehabilitation of morally and physically obsolete fixed assets and don't allow operating the system by commercial principles.

During the next years the main precondition for the normal activity of energy is the financial rehabilitation of the sector through releasing the system from huge liabilities. Cash flow projections for the coming 5 years under current tariffs show that it is not realistic to pay off the debts at the expense of profit of the system.

That is why in the framework of this project the main sources of the system payables clearance are viewed:

- Restructuring of the bank loans, either through re-financing of old loans or structuring of current operating loans
- Mutual cancellation of receivables and payables
- Restructuring of the payables
- Receipts from privatization in power sector
- Privatization of the assets that are not related to the financial activity of the system
- Tied financing of the sector
- Profits

Below are summarized suggestion for clearance and restructuring of payables and bank loans of the energy sector:

6. Cancellation tax liabilities of the energy sector and social insurance fund to the cancellation for the budget organizations and quasi-fiscal (irrigation, drinking water, transport), which

are virtually equal (tax liabilities of the energy system and areas on social insurance payments are 41.108 billion AMD, and liabilities of the budget organizations and quasi-fiscal are 40 893 billion AMD). Repayments of the liabilities of quasi-fiscal can be implemented by making tied financing from state budget to the quasi-fiscal companies (in the form of budget grant or loan) for energy liabilities clearance, then the later cancel the liabilities towards energy sector, while energy sector companies repay their liabilities towards the budget and social insurance fund.

7. To reorganize or to repay budget loans of the system (this is about 16.787 billion AMD), making tied financing to the system companies in the form of budget grant.
8. The intention of the Government, which implies to cancel the liabilities of the system towards the nuclear flue and also the new liability towards the nuclear flue which is imported for ArmNPP in 2002 (6.7 mln USD) at the expense of 50% revenue coming from electricity exportation, is preferable. This liability cancellation of 38.7 mln USD is assumed to be implemented during 5 years. As a result, the gap of the system needs to be filled at the expense of budget tied financing, which estimated 5.92 mln USD a year.
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outline the debt cancellations resulting from the above mentioned Law, as well as the Government Resolution regarding the cancellations of arrears resulting from the privatization of ArmCement. Furthermore, additional recommendations include additional repayment/cancellations of arrears and long-term debt to be financed through additional government subsidies. All calculations and recommendations are presented for the balances as of January 1st, 2002, which require verification: verification results should be reflected in the total amounts.

The recommendations are given considering only the amount of cancellations, envisaged in the abovementioned Law, for the consumed water before 2000. The arrears accumulated after 2000 are not included in calculations. Arrears on such payables, as current tax liabilities, salaries and social insurance payments are not included, as well, assuming that the companies will be thus motivated to collect their receivables in order to pay the current payables. If only around 30-40% of the amount of receivables remaining after cancellation of pre-2000 arrears is collected, this will be sufficient to cover remaining payables. In case collections of arrears exceed the amount of payables, the extra funds should be distributed to the employees of companies as special bonuses in order to motivate them to collect the arrears on receivables.

As it is mentioned above, the debt cancellation/repayment schemes are presented for arrears as of January 1st, 2002. However, the schemes for Yerevan WWC and Electrotransport CJSC should also include the arrears to be accumulated during 2002, as none of them had adequate sources of financing 2002 gaps. Detailed explanations are given below for each of the public utility sectors.

The main point of recommendations is that all cancellations/repayments, through the chain of inter-indebtedness between the sectors will finally be reflected in either (i) tax arrears of the sectors, or (ii) repayment of budgetary credits to be paid back to the Government, thus, having no impact on the Government Budget. Moreover, the arrears and long-term debts of water sector companies deferred to year 2006 in accordance with Government Resolutions are also included in repayment/cancellation amounts, assuming that the companies will hardly have sufficient resources to repay them by the time they come due.

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6. At the second place, the deferred electricity bills at the amount of the difference between 2435 mln and 1139 mln AMD (1297 mln AMD).
7. Additional electricity arrears of 154 mln can be cancelled/repaid at the expense of arrears of budgetary organizations to the irrigation companies.
8. The total deferred electricity bills are equal to 2616 mln AMD, and the remaining amount is suggested to repay at the expense of additional subsidies from the government, which will subsequently repaid back to the budget as power sector tax liabilities.

Consequently, the Irrigation sector companies will still have receivables of 3.6 bln AMD. If around 30-35% is collected, that will be sufficient to cover the remaining 1.3 bln AMD of accounts payable. The restructuring operations will have no impact on the current activities of irrigatin companies during 2002-07.

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